

Order Anacanthini

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Rostral and orbital portion of cranium longer than hind part. Cranial cavity wide in front. Mouth terminal or inferior, more or less protractile.

Teeth in jaws in bands or uniserial. Vomer, palatines and pterygoids with or without teeth. Gill openings wide, membranes usually free from isthmus. Gills 4, pectinate, with 4 gill slits. No pseudobranchiae. Lower pharyngeals separate. Supraoccipital well developed, horizontal and keel like behind, separates parietals. Skeleton ossified. Pectoral arch

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Chaetodon klunzingeri Kosmann and Räuber,
Zool. Ergeb. Reise Roth. Meer., 1877, p. 13,
plate 2, fig. 11.

Chaetodon trifasciatus var. arabica Steindachner,
Anz. Akad. Wien, nach. 39, ^{no. 24,} November 20, 1902,
p. 317. South Arabia. (name only). —
Steindachner, Denks. Akad. Wiss. Wien,
band 71, abth. 1, 1907, p. 138, plate 2, fig. 3
(Makalla, South Arabia).

Chaetodon trifasciatus subsp. candifasciatus
Ahl, Arch. Naturges., band 89, abth. A,
heft 5, 1923, p. 57. Padung, Siporab, Madagascar,
Mozambique, German East Africa.

suspended from skull,
symphysis only loosely joined
by ligament. Vertebral
progressively smaller posteriorly.
Air bladder, if present, without
pneumatic duct. Body scaly,
scales cycloid or ctenoid. Fins
spineless, except first two
dorsal rays of some Coryphaenoididae.
Vertical fins very long. Caudal
homocercal or absent, when
present without expanded hypural,
symmetrical and supported
by neural and haemal spines
of hind vertebral and by
basal bones similar to those

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Depth $1\frac{1}{2}$ to $1\frac{2}{3}$; head $2\frac{3}{5}$ to $3\frac{2}{3}$ width $1\frac{3}{5}$ to $1\frac{3}{4}$. Snout 3 to $3\frac{1}{2}$ in head; eye $2\frac{1}{2}$ to $3\frac{1}{5}$, greater than snout, 1 to $1\frac{1}{4}$ in interorbital; maxillary $\frac{3}{5}$ to $\frac{2}{3}$ in snout, $3\frac{1}{5}$ to 4 in head; interorbital $2\frac{2}{3}$ to 3, broadly convex. Gill rakers 4 + 13, short spines, $\frac{1}{5}$ of gill filaments, which $1\frac{1}{4}$ in eye.

Scales 38 to 40 between gill opening and caudal base; tubes 26 to 30 in lateral line; 6 or 7 scales above lateral line, 13 or 14 below. Scales with 10 to 12 basal radiating striae; apical denticles 76 to 131, with 3 to 12 transverse series of basal elements; circuli fine.

D. XIII, 21, I or 22, I, fifth spine $1\frac{1}{2}$ to $1\frac{3}{5}$ in head, tenth ray $1\frac{3}{5}$ to $1\frac{2}{3}$; A. III, 19, I or 20, I, third spine $1\frac{3}{5}$ to 2, third ray $1\frac{1}{2}$ to $1\frac{2}{3}$; least depth of caudal peduncle $2\frac{1}{2}$ to $2\frac{4}{5}$; caudal $1\frac{1}{3}$ to $1\frac{1}{2}$, hind edge convex; pectoral 1 to $1\frac{1}{6}$; ventral $1\frac{1}{8}$ to $1\frac{1}{5}$.

Brown, pale to whitish on lower surface of head and abdomen. Each row of body scales with median dark to dusky streak, so all appear little inclined upward posteriorly. Black band from predorsal down through eye and across breast where meeting with fellow; above eye with narrow white bordering line in front and behind, below eye with broad

supporting dorsal and anal rays. Ventrals below or before pectorals, rays 1 to 9.

A large group of marine fishes, the shore forms living mostly in the cold waters of northern seas.

Chaetodon austriacus Rüppell, Zen.

Wübelth., Fisch., 1839, p. 30, plate 9, fig. 2.

Mjedda, Red Sea.

Citharodus austriatus Kaup, Arch.

Naturges., band 26, abth. 1, 1860, p. 143 (Africa).

Chaetodon trifasciatus var. austriacus

Klunzinger, Fisch. Roth. Meer., 1884, p. 55.

Chaetodon trifasciatus subsp. austriacus Ahl,

Arch. Naturges., band 89, abth. 6, heft 5,

1923, p. 57 (Red Sea).

→ Chaetodon ovalis Thiollière, Fauna Woodlark,

1857, p. 164. Woodlark Island.

Chaetodon papels (Montrouzier) Thiollière,
l.c.

Chaetodon layardi Blyth, Prodr. Faun. Zeylon,

DeLaart, append., 1852, p. 50. Ceylon.

Chaetodon melapterus Güichenot, Notes J.

Reunion, vol. 2, 1866, p. 6. Reunion.

{ Chaetodon bellus (Volander) Lay and Bennett, Zool.

Beechey's Voy., 1839, p. 61 (name in synonymy).

Analysis of Families

a. Caudal fin present; ventrals jugular.

b. Caudal united with long anal; small short dorsal fin close behind pectoral bases.

Ateleopodidae.

b.² Caudal free from dorsal and anal, dorsal extended along back, often divided in 2 or 3 sections.

c. Chin with barbel, rarely obsolete; frontal bones without triangular excavated area above. Gadidae.

c.² No barbels; frontal bones paired, with triangular excavated above, divergent frontal crests continuous

27, fig. 5. ~~Castelnau, Rep. Fish. Austral.~~
~~Victoria Rec. Phila. Exhib.~~, 1875, p.

~~Cape York, Queensland~~. — von Martens,
Preuss. Exped. Ost Asien, 1876, p. 388

(Amboina). — Peters, Monatsb. Akad.

Wiss. Berlin, 1876, p. 437 (Mauritius). —

Meyer, Ann. Soc. Espan. Hist. Nat. Madrid,
vol. 14, 1885, p. 17 (Manado, Celebes). —

Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914,

almost new to shape of anal. Anal. limited
and first of tail, limited limitation
of dark black, each scale with lateral
black of known to black. Dorsal, except
dark black barely after posteriorly;
and caudal. Faintly brownish - buff;
vertical line edged with blue brownish
and subdorsal line. Dorsal
neutral - dusky, also ventral; first at
front edge of body blue. Dorsal dusky.
Last dorsal. A very unusual species in
its color markings and apparently none
in collection. It was known to the early
naturalists.

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from forked occipital crest.

Merlucciidae.

a. Caudal absent, dorsal and anal united at end of strongly tapering tail; ventrals below or somewhat behind pectoral origin.

Coryphaenoididae.

Depth $1\frac{3}{4}$ to $1\frac{7}{8}$; head $2\frac{4}{5}$ to $3\frac{1}{2}$, width $1\frac{3}{4}$ to 2. Snout $2\frac{2}{3}$ to 3 in head from snout tip; eye $2\frac{1}{2}$ to 4, 1 to $1\frac{1}{5}$ in snout, $1\frac{1}{3}$ in interorbital and greater than interorbital in young; maxillary reaches opposite $\frac{3}{5}$ to $\frac{2}{3}$ in snout, $3\frac{1}{2}$ to $3\frac{4}{5}$ in head; interorbital 3 to 4, broadly convex; preopercle spine along upper edge $2\frac{2}{3}$ to $5\frac{4}{5}$. Gill rakers 6 + 12, short strong points, $3\frac{1}{2}$ in gill filaments, which $1\frac{1}{3}$ in eye.

Scales 45 to 48 in lateral line to caudal base; 6 scales above lateral line, 20 or 21 below. Scales with 5 or 6 basal radiating striae; apical denticles 25 to 27, each with long slender rootlet; circuli fine.

D. XIII or XIV, 17, I or 18, I, last spine $1\frac{1}{2}$ to $1\frac{4}{5}$ in total head length, ninth ray $1\frac{1}{8}$ to $1\frac{1}{3}$; A. III, 18, I, third spine $1\frac{1}{2}$ to $2\frac{1}{5}$, sixth ray $1\frac{1}{5}$ to $1\frac{1}{3}$; least depth of caudal peduncle $2\frac{1}{5}$ to $2\frac{4}{5}$; caudal rounded or convex behind, $1\frac{1}{4}$ to $1\frac{2}{5}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{4}$; ventral $2\frac{1}{3}$ to $2\frac{2}{3}$ in combined head and body.

Light yellowish brown generally, more or less tinged dusky on lower surface between ventrals and caudal peduncle. Dark blackish brown area from front of interorbital until opposite first few dorsal spines; edges broadly bordered with light blue, and young with blue line from front of spinous dorsal to lower hind eye.

Family Ateleopodidae

Body elongate, with short trunk and long, compressed, tapering tail. Head rather large, with muciferous cavities. Eye with very small pupil. Mouth small, inferior or subterminal, protractile. Teeth small, villiform, in bands in upper or both jaws, none on palate. Nostrils 2, just before eye. Erectile spine sometimes immediately behind eye. Gill opening wide, membranes united and narrowly joined to isthmus, with narrow free border. Gills 4, with short flat gill filaments, slit behind fourth gill arch. Gill rakers 7 to 10 short spinescent tubercles. No pseudobranchiae. Branchiostegals 6 to 9. Skeleton largely cartilaginous. No air bladder. Skin tender, more or less gelatinous, scaleless or partly covered with nonimbricate, extremely thin, variable scales.

Lateral line present, inconspicuous, pores widely separated. Short spineless dorsal, rather close behind pectoral fin bases. Anal long, continuous with caudal, which homocercal. Pectoral well developed, lateral. Ventral jugular, reduced to stout filament or stiff flexible rod, simple or bifid at end and composed of 2 many jointed components of one ray which remains distinct and may separate from each other terminally.

Analysis

Synopsis of genera

a.¹ Dorsal rays 8 to 10; mouth moderate.

Ateleopus.

a.² Dorsal rays 3; mouth small.

Parateleopus.

Genus Ateleopus Schlegel

Ateleopus Schlegel, Fauna Japonica, Poiss., pts. 10-15, p. 255, 1846.

(Atypic. Type Ateleopus japonicus Bleeker, 1854, affixed.) (Ateleopus Duméril and Bibron in herpetology not involved.)
Ateleopus Bleeker, Verh. Batavia.

Genoot. (Nalez. Jap.), vol. 25, p. 19, 1854. (Type Ateleopus japonicus Bleeker, monotypic.)

Podateles Boulenger, Zool. Record, vol. 39, Pisces, p. 23, 1902. (Type Ateleopus japonicus Bleeker, virtually. Podateles Boulenger proposed to replace Ateleopus Schlegel.)

Ijimaia Sauter, Ann. Zool. Japon., vol. 5, ^{art.} ~~pt.~~ 4, p. 235, 1905. (Type, Ijimaia doefleini Sauter, monotypic.)

Body and tail compressed, latter well elongated, band like. Head oblong, long as trunk. Snout rather long and broad, overlaps mouth. Eye moderate, with small horizontal pupil. Maxillary protractile downward. Teeth villiform, in narrow bands. Bones of head and body soft, semicartilaginous, those of snout enclosed in thick mucigerous skin. Skin scaleless. Dorsal rays 8 to 10.

Chaetodon vittatus Schneider, Syst. Ichth.

Bloch, 1801, p. 227. Sumatra (in Mungo Park). — Bennett, Proc. Comm. Zool. Soc.

London, 1831, p. 61 (Mauritius). — Cuvier, Hist.

Nat. Poiss., vol. 7, 1831, p. ³⁴~~36~~ (Tahiti, Guam,

Qualan, Bourbon, Madagascar, Mauritius,

East Indies). — Lay and Bennett, Zool.

Beechey's Voy., 1839, p. 61, plate 17 (Byam

Martin Island, Paumotu). — Günther, Cat.

Fish. Brit. Mus., vol. 2, 1860, p. 23 (Ceram,

Ambonia). — Guichenot, Notes D. Reunion,

vol. 2, 1862, p. 25. — Guichenot, Mem. Soc.

Hist. Nat. Cherbourg, vol. 2, series 2, 1866,

p. 145 (Madagascar). — ~~Kner, Reise Novara~~

~~Wiener~~, 1866, p. 100 Klunzinger, Verh. zool. bot.

Ges. Wien, band 20, 1870, p. 782 (Kosei). —

Capello, Journ. Soc. Sci. Lisbon, 1871, p. 199

(Mozambique). — Günther, Journ. Mus.

Godeffroy, band 2-3, ^{left}5-6, 1874, p. 41 (Paumotu).

— Day, Fishes of India, pt. 1, 1875, p. 107, plate

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Ateleopus doeffleini (Santer),

Ijimaia doeffleini Santer, Annot.
Zool. Japon., vol. 5, art. 4, p. 235, fig.
1905 (type locality:

— Jordan, Tanaka, Snyder, Journ. College
Sci. Tokyo, vol. 33, art. 1, p. 57, 1913
(reference).

Ateleopus indicus Alcock

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Ateleopus indicus Alcock, Ann. Mag.
Nat. Hist., ser. 6, vol. 8, p. 123, fig. 3,
1891 (type locality: lat. $11^{\circ}31'40''$ N.,
long. $92^{\circ}46'40''$ E., Andaman Sea,
180 to 220 fathoms); Illustrat.
Zool. Investigator, pt. 1, pl. 2, fig. 2,
1892. — Goode and Bean, Oceanic

Ichth., p. 349, 1895 (reference). —
Alcock, Cat. Deep Sea Fishes Ind. Mus.,
p. 123, 1899 (Andaman Sea; Arabian
Sea; 224 to 284 fathoms).

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Ateleopus japonicus Bleeker

Ateleopus japonicus Bleeker, Verhand.
Batavia. Genoot. (Naleg. Jap.), vol. 25,
p. 19, 1854 (on Schlegel). — Günther,
Cat. Fishes Brit. Mus., vol. 4, p. 398,
1862 (copied); Rep. Voy. Challenger,
vol. 22, p. 159, pl. 50, fig. A, 1887
(Tokio Museum). — Goode and Bean,

Oceanic Ichth., p. 349, fig., 1895 (reference).
— Jordan, Tanaka, Snyder, Journ. College
Sci. Tokyo, vol. 33, art. 1, p. 57, 1913
(compiled). — Jordan and Richardson,

Mem. Carnegie Mus., vol. 6, no. 4, p. 299,
pl. 37, fig. 1, Sep. 1914 (Sagami Bay). —
Tanaka, Journ. Fac. Sci. Univ. Tokyo,
Zool., vol. 3, pt. 1, no. 4, 1931, p. 18
(compiled).

Ateleopus Schlegel, Fauna Japonica, Poiss.,
pts. 10-15, p. 255, pl. 112, fig. 1, 1846
(type locality: entrance to great bay
in district of Omura).

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Ateleopus purpureus Tanaka, Zool.
Mag. Tokyo, vol. 27, no. 325, p. 565,
Nov. 15, 1915 (type locality: near
Mito, Province Hitach); Figs. Descr.
Fishes Japan, vol. 22, p. 396, pl. 107,
fig. 328, April 25, 1916 (type).

Ateleopus tanabensis Tanaka,

= japonicus 826

Ateleopus natalensis Regan

Ateleopus natalensis Regan, Ann. Mag. Nat. Hist., ser. 9, vol. 7, May 1921, p. 414 (type locality: 15 to 22 miles off the Umvoti River, Natal). — Gilchrist,

Fisher. Mar. Biol. Surv. South Africa, Spec. Rep. no. 2, p. 77, 1922 (Natal, 157 to 168 fathoms). — Barnard, Ann.

South African Mus., vol. 21, pt. 1, p. 251, pl. 10, fig. 3, June 1925 (off Natal, 120 to 168 fathoms).

~~Spinaria~~
Ateleopus plicatellus (Gilbert) 827

Ateleopus plicatellus Gilbert, Bull.
U. S. Fish Comm., vol. 23, pt. 2, p. 653,
fig. 253, 1903 (1905) (type locality:
Pa'ilolo Channel; off south coast
of Oahu; 257 to 684 fathoms). —
Fowler, Mem. Bishop Mus., vol. 10,
p. 71, 1928 (type).

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Genus Parateleopus Smith and Radcliffe

Parateleopus Smith and Radcliffe, Proc.
U. S. Nat. Mus., vol. 43, p. 139, 1912.

(Type Parateleopus microstomus
Smith and Radcliffe, orthotypic.)

Body and tail compressed, tapering.
Head long as trunk. Snout fleshy,
pointed, protrudes beyond mouth.
Mouth small, semicircular, horizontal.
Lips fleshy. Upper jaw with band
of small teeth, lower and palate
toothless. No strong bony protuberance
above and behind eye. Gill rakers
few. No pseudobranchiae. No scales.
Lateral line inconspicuous, pores
wide set. Dorsal rays 3.

Parateleopus microstomus Smith and

Radcliffe
Radcliffe, Proc. U. S. Nat. Mus., vol.
43, p. 140, fig. 11, 1912 (type locality:
near Makyan Island, Dutch East
Indies, 275 fathoms). — Weber and

Beaufort, Fishes Indo Austral. Archip.,
vol. 5, p. 3, fig. 1, 1929 (copied).

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Family Gadidae

Body more or less elongate, tail moderate, coniform behind. Head large, bones mostly firm or cavernous by muciferous sensory cavities. Mouth large, terminal, more or less protractile. Mandibular barbel usually present. Teeth strong, small or villiform, in bands or uniserial in jaws. Vomer, palatines or pterygoids with or without teeth. Preopercle edge usually covered by skin of head. Suborbitals moderate. Gill openings wide, membranes separated or but slightly united, usually free from isthmus. Gills 4, slit behind fourth. Pseudobranchiae glandular or absent. Branchiostegals 7. Air

Arch. Naturges., band 89, abth. A, heft 5,
 1923, p. 56 (Samoa, New Guinea, New Pomerania,
 Ralun, Marshalls, Jaluit, Bismark Archipelago,
 New Mecklenberg, Ambona, Thalassia, Vulkan
 Island). — Fowler, Bishop Mus. Bull., no. 22,
 1925, p. 12 (Guam), p. 28 (Honolulu), p. 34
 (Samoa). — Fowler and Ball, Bishop Mus.
 Bull., no. 26, 1925 (1926), p. 17 (Johnston
 Island).

Tetragnopterus (Tetragnopterus) trifasciatus
Bleeker, Atlas. Ichth. Ind. Neerl., vol. 9,
 1877, p. 35, plate (15) 377, fig. 1 (Sumatra,
 Batu, Cocos, Java, Celebes, Flores, Solor, Timor,
 Halmahera, Ternate, Obi major, Ceram,
 Ambona, Harau, Banda, Goram, Aru,
 Waigiu). — Bleeker, Verh. Akad. Wet.
 Amsterdam, deel 18, no. 3, 1879, p. 1 (Mauritius).
Choctodon (Tetragnopterus) trifasciatus Vanwageningen,
 Hist. Nat. Madagascar, Poiss., 1891, p. 254.

bladder usually well-developed. Pyloric coeca numerous, sometimes few or none. Scales small, cycloid. No spines, fin rays all articulated. Dorsal extending along back, may form 1, 2 or 3 fins. Anal long, single or divided. Caudal distinct or confluent with dorsal and anal, symmetrical, homocercal, supported by neural and haemal spines of hind vertebrae and by basal bones like those supporting preceding dorsal and anal rays; rays of caudal above and below procurent. Pectoral pterygials 4. Ventrals jugular, joined to pubic bone, with 2 to 9 branched rays.

Fishes chiefly of polar and temperate seas, mostly marine,

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Chaetodon trifasciatus Munro Tark.

Chaetodon trifasciatus Munro Tark., Trans.
Linn. Soc. London, vol. 3, 1797, p. 34. Sumatra.
— Lacépède, Hist. Nat. Poiss., vol. 4, 1803, pp. 462,
495 (Sumatra). — Playfair, Fishes of Zanzibar,
1865, p. 34 (Zanzibar). — Day, Fauna British
India, vol. 2, 1889, p. 7. — Sauvage, Hist. Nat.
~~Madagascar, Poiss., vol. 1, p. 154.~~ — Sternsdachner,
Abhandl. Senckenberg. Gesell., band 25, 1900, p.
420 (Ternate). — Waite, Records Austral. Mus., vol. 5, 1903, p. 32 (Lord Howe Island).
— Fowler, Journ. Acad. Nat.
Sci. Phila., vol. 12, series 2, 1904, p. 544
(Padang). — Jordan and Seale, Bull. Bur.
Fishes, vol. 26, 1906 (1907), p. 33 (Cavite). —
Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 510
(Okinawa). — Weber, Siboga Exped., band 65,
1913, p. 304 (Karkaralong, Saleyer, Binangka, Banda,
Tual). — Fowler, Copeia, no. 58, June 18, 1908, p.
64 (Philippines). — Fowler, Proc. Acad. Nat.
Sci. Phila., 1923, p. 42 (Madagascar). — Ahl,

some living in oceanic abysses.
many are important food fishes.

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52816 U.S.N.M. Honolulu. Bureau
of Fisheries 1901-1902. Length 177 mm.
[565.]

58532 U.S.N.M. Honolulu. E.L. Berndt.
Length 170 mm.

Genus Algoa Castelnau

Algoa Castelnau, Mém. Poiss. Afrique australe, p. 69, 1861. (Type Algoa viridis Castelnau, monotypic.)

Body ovoid. No mandibular barbel. Teeth very strong, curved, well spaced, in several series. Teeth on palate. Single dorsal fin, well separated from caudal. Caudal forked. Ventrals with several rays.

A doubtful genus.

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Algoa viridis Castelnau

Algoa viridis Castelnau, mém. Poiss.
Afrique australe, p. 69, 1861 (type
locality: estuary of Zwartkops River,
Algoa Bay). — Barnard, Ann. South
African Mus., vol. 21, pt. 1, p. 319,
June 1925 (copied).

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Analysis of Genera

a. Gadinae. Dorsals 3.

b. Anal divided into 2 separate fins.

c. Lower jaw distinctly projecting; barbel small or obsolete; caudal concave behind.

d. Upper teeth slender, wide, uniserial or biserial; caudal forked.

Boreogadus.

d.² Upper teeth in villiform band, outer somewhat larger; caudal lunate.

e. Subopercle and postclavicle normal, both thin and flat, not enlarged and ivory-like.

Pollachius.

e.² Subopercle and postclavicle normal, ~~both thin and flat~~ bone dense and smooth, like ivory.

Theragra.

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Holacanthus navarchus Cuvier.

Holacanthus navarchus Cuvier, Hist. Nat.

Poiss., vol. 7, 1831, p. ¹²¹~~128~~. Java. — Günther,

Cat. Fish. Brit. Mus., vol. 2, 1860, p. 49

(Amboina). — Günther, Cruise of Curaçoa,

Brenchley, 1873, p. 410 (Misol, Moluccas).

— Bleeker, Atlas Ichth. Ind. Néerl., vol.

9, 1877, p. 65, plate (9) 371, fig. 3 (Java,

Flores, Amboina, Banda).

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c.² Lower jaw included; barbel well developed; caudal not concave behind.

f.¹ Transverse extensions of vertebral thickened, swollen and ivory-like at tip; size small. Eleginus.

f.² Transverse extensions of vertebral not swollen at tip; size large. Gadus.

b.² Anal continuous single fin. Tripterygius.

a.² Anal forming continuous fin or sometimes only deeply notched; dorsal usually divided into but 2 fins.

g.¹ Dorsal fins 2.

h.¹ First dorsal with distinct rays, like those of second dorsal.

i.¹ Ventral rather broad, rays 6.

9665 [2014]. Mabel Island. September 29, 1909. Length 155 mm.

A 1499. Kait Point, Celebes. December 29, 1909. Length 165 mm.

j. Morinal. Anal single,
but with deep notch; mouth
inferior or subinferior.

k. Snout little depressed
or projecting; edge without
keel; tail slender.

l. Ventral rays 5 to 8,
subequal, short.

m. Anal in 2 distinct
parts; teeth cardiform,
in band above. Mora.

m.² Anal continuous, more
or less deeply notched.

n. Snout obtuse; teeth on
vomer; barbel present.

Lepidion.

n.² Snout obtusely conic;
no teeth on vomer; no
barbel. Halargyreus.

l.² Ventral rays 1 to 3, longte,
with or without additional

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Light yellowish-brown, each scale on side with large median pale or light spot. Lips dusky-brown. Iris light-brown. Small black ocellate spot, little less than eye, at predorsal each side of supraoccipital. Deep brown white blotch at suprascapula, little smaller than eye and ocellate. Outer half of anals broadly black, fins otherwise all uniformly pale.

Zanzibar, Reunion, East Indies, Philippines. A very handsome species readily known by its general bright yellow or orange color with a few contrasted dark markings.

short rays.

O.¹ Scales moderate;
jaws even; pectoral
not reaching dorsal
or anal. Pregmaceros.

O.² Scales very small;
mandible protruding;
pectoral reaches
well in first dorsal
and front of anal.

Anchenoceros.

h.² Snout flat, depressed,
projecting over mouth, beaked
on edge; tail attenuate.

~~h.~~² ~~h.~~² ~~h.~~² p.¹ Jaw teeth unequal,
outer row of strong
teeth followed by
narrow band of
smaller ones. Lotella.

p.² Jaw teeth villiform,
in single broad

Depth $1\frac{2}{3}$ to $1\frac{3}{4}$; head $3\frac{1}{3}$ to $3\frac{2}{3}$, width $1\frac{1}{2}$ to $1\frac{3}{4}$.

Snout $2\frac{3}{4}$ to 3 in head from snout tip, $1\frac{1}{4}$ to $1\frac{1}{3}$ in snout, $1\frac{1}{6}$ to $1\frac{1}{5}$ in interorbital; maxillary $\frac{3}{4}$ to $\frac{4}{5}$ in snout, $3\frac{1}{3}$ to $3\frac{4}{5}$ in head; interorbital 3 to $3\frac{1}{5}$, broadly convex. Gill rakers 4 + 13, short points, $\frac{1}{5}$ of gill filaments, which $1\frac{1}{5}$ in eye.

Scales 48 or 49 between gill opening and caudal base; 48 to 50 scales in lateral line to caudal base; 9 scales above lateral line, 24 to 28 below. Scales with 6 basal radiating striae; apical denticles 48 to 52 with basal rods, often many auxiliaries; circuli fine.

D. IV, 17, I or 18, I, last spine $1\frac{1}{3}$ to $1\frac{2}{5}$ in total head length, seventh ray $1\frac{1}{8}$ to $1\frac{1}{5}$; A. III, 18, I, last spine $1\frac{1}{8}$ to $1\frac{1}{4}$, third ray $1\frac{1}{3}$ to $1\frac{2}{5}$; least depth of caudal peduncle 2; caudal convex behind, ends in filament above about long as eye, $1\frac{1}{4}$ to $1\frac{1}{3}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$; ventral 1 to $1\frac{1}{5}$.

band. Physiculus.

$p.^3$ Jaw teeth in premaxillary biserial, series divided by groove. Austrophycis.

$i.^2$ Phycinae. Ventral rays very slender; first dorsal with 5 rays.

$qf.^1$ Ventral a single bifid ray. Laemonema.

$qf.^2$ Ventral rays 8, outer 2 very long and united great part their length.

Laemonemoides.

$b.^2$ Gaidropsarinae. First dorsal single slender ray and band of fringes; second dorsal and anal distinct; teeth

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Holacanthus trimaculatus Cuvier.

Holacanthus trimaculatus (Lacépède) Cuvier,
Hist. Nat. Poiss., vol. 7, 1831, p. ~~141~~¹⁹⁶, plate
182 Moluccas. — Günther, Cat. Fish. Brit.
Mus., vol. 2, 1860, p. 50 (Amboina and
Moluccas). — Playfair, Fishes of Zanzibar,
1866, p. 38 (Zanzibar). — Bleeker, Atlas Ichth.
Ind. Néerl., vol. 9, 1877, p. 63, plate (11) 373,
fig. 5 (Java, Amboina, Banda).

in band in jaws and on
vomer; several barbels on
muzzle. Gaidropsarus.

3897. ~~Tidore~~ Island. November 26,

1909. Length 59 mm.

8273. ~~Hokuro~~, ~~Soo Wan~~, ~~Formosa~~.

January 29, 1910. Length 91 mm.

841

Genus Boreogadus Günther

Boreogadus Günther, Cat. Fishes Brit. Mus., vol. 4, p. 336, 1862. (Type Gadus fabricii Richardson, designated by Jordan and Gilbert, Bull. U.S. Nat. Mus., no. 16, p. 807, 1882.)

Body elongate, slender, little compressed. Caudal peduncle slender, rounded. Head long, pointed. Lower jaw projects. Upper teeth slender, wide set, uniserial or biserial. Gill rakers numerous, long, slender. Dorsal fins 3. Anal divided as 2 fins. Caudal forked.

Small codfishes of the Arctic Seas. They differ from Pollachius and Theragra chiefly in their dentition and forked caudal.

842

Boreogadus saida (Lepechin)

Gadus saida Lepechin, Nov. Comment.
Acad. Sci. Petropol., vol. 18, p. 512,
1774 (type locality: Russia). —
Bonnaterre, Tabl. Ichth., p. 47, pl.
86, fig. 360, 1788 (White Sea). —
Gmelin, Syst. Nat. Linn., pt. 1, p. 1166,
1789 (copied). — Walbaum, Arted.
Pisc., vol. 3, p. 134, 1792 (copied). —
Lacépède, Hist. Nat. Poiss., vol. 2, pp.
366, 405, 1800 (copied). — Schneider,
Syst. Ichth. Bloch, p. , 1801 (copied).
— Günther, Cat. Fishes Brit. Mus., vol.
4, p. 337, 1862 (copied).

Boreogadus saida ~~J. H. Bean, Bull. U. S.~~
~~Nat. Mus., no. 4, p. 108, 1879 (copied).~~

— Jordan and Evermann, Bull. U. S. Nat.
Mus., no. 47, pt. 3, p. 2533, 1898 (copied).
— Jordan and Starks, Bull. U. S. Fish
Comm., vol. 22, p. 601, 1902 (1904) (Matsu-
shima Bay, Japan). — Fowler, Proc.
Acad. Nat. Sci. Philadelphia, p. 370,

1905 (Point Barrow, Alaska). — Evermann
and Goldsborough, Bull. Bur. Fisher.,
vol. 26, p. 346, fig. 126, 1906 (1907)
(Alaska records). — Jordan, Evermann,
Clark, Rep. U. S. Comm. Fisher., pt. 2, p.
209, 1930 (compiled).

Merlangus polaris Sabine, Suppl. Parry's
Voy., p. 211, 1824 (type locality: Baffin
Bay).

Gadus fabricii Richardson, Fauna Bor.
Amer., vol. 3, p. 245, 1836 (type locality:
northern bays of Greenland). — Günther,
Cat. Fishes Brit. Mus., vol. 4, p. 336, 1862
(Baffin Bay; Beechey Island).

Gadus agilis Reinhardt, Dansk. Vidensk.
Felsk. Afhandl. Kjöbenhavn, vol. 7, p. 126,
1838 (type locality: Greenland).

Gadus glacialis Peters, Nord Pol. Exped.,
vol. 2, p. 172, 1874.

Genus Pollachius Hilsson

Pollachius Hilsson, in Bonaparte, Cat. Method. Pesc. Eur., p. 45, 1846. (Type Pollachius typus Bonaparte = Gadus virens Linnaeus.)

Body rather elongate. Snout conic. Mandibular barbel very small or obsolete. Mouth moderate or large, lower jaw projecting. Maxillary reaches beyond front of eye. Teeth in jaws equal, or outer row slightly enlarged. Villiform teeth in vomer, none on palatines. Gill membranes more or less united. Subopercle and postopercle not enlarged, nor ivory like. Vertebral 55, of which 32 caudal. Scales minute. Dorsals 3. Anals 2. Caudal lunate. Ventrals short. Vent below first dorsal.

Species few, of large size and living in Arctic or subarctic seas.

Pollachius brandti (Hilgendorf)

Gadus brandti Hilgendorf, Mitt.
Deutsch. Gesell. Nat. Volker. Ostasiens,
vol. 1, pt. 7, p. 39, 1875 (type locality:
southern Japan).

Pollachius brandti Jordan and Snyder,
Annotat. Zool. Japon., vol. 3, p. 118, 1901
(reference). — Jordan, Tanaka, Snyder,
Journ. College Sci. Tokyo, vol. 33, art.
1, p. 407, 1913 (compiled).

Pollachius minor (Steindachner and
Döderlein)

Gadus minor Steindachner and
Döderlein, Denks. Akad. Wiss. Wien,
Math.-nat. Kl., vol. , pt. , p. 277,
1887 (type locality: Tokyo).

Pollachius minor Jordan and Snyder,
Annotat. Zool. Japon., vol. 3, p. 118,
1901 (reference). — Jordan, Tanaka,
Snyder, Journ. College Sci., Tokyo,
vol. 33, art. 1, p. 407, 1913 (compiled).

Genus Theragra Lucas

Theragra Lucas, in Jordan and Gilbert,
Rep. Fur Seal Investig., pt. 3⁴⁸⁶,
1896 (1898). (Type Gadus chalcogrammus
Pallas, monotypic.)

Subopercle and postclavicle thick,
smooth, dense, like ivory. Vertebrae
52, of which 33 caudal.

Closely related to Pollachius, differing
chiefly in ivory like structure of the
subopercle and postclavicle bones.
Two species in the North Pacific.

848

Theragra chalcogramma (Pallas)

Gadus chalcogrammus Pallas, Zoogr. Ross. Asiatic., vol. 3, p. 198, 1811 (type locality: Ochotsk Sea; Kamchatka).

Theragra chalcogramma Evermann and Goldsbrough, Bull. Bur. Fisher., vol. 26, p. 346, fig. 127, 1906 (1907) (Cleveland Passage, Shagway, Karluk, Shakan, Sand Point, Fox Harbor, Dundas Bay, Pavlov Harbor, Unalaska; Chignik Bay; Sitkoh Bay; Loring; Link Bay; Kamchatka; St. Paul Island).

— Franz, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. band 1, p. 30, 1910 (Yokohama). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, part. 1, p. 406, 1913 (Bering Sea; Sitka; Kuriles; Robben; Hokkaido; Toyama Bay). —

Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, p. 326, June 27, 1925 (hoo).

849

Genus Eleginus Fischer

Eleginus Fischer, Mém. Soc. Nat.
Moscou, vol. 4, pt. 2, p. 252, pl. 18,
1813. (Type Gadus navaga Koelbreuter,
monotypic.)

Tilesia (not Lamouroux 1821) Swainson,
Nat. Hist. Animals, vol. 2, p. 300, 1839.
(Type Gadus gracilis Tilesius,
monotypic.)

Pleurogadus J. H. Bean, in Jordan,
Rep. U. S. Fish Comm., pt. 13, p. 918,
1885 (1887). (Type Gadus gracilis
Tilesius, orthotypic.)

Body rather slender. Head moderate, long. Mandibular barbel small. Lower jaw included within upper. Subopercle and postclavicle enlarged, bone dense and smooth like ivory. Transverse projections of vertebrae club shaped, narrow at base, expanded terminally into rounded hollow bulb at tips. Scales very small. Dorsal fins 3. Anal divided as 2 fins.

Small cod fishes of the Arctic Seas.

A 751. Sipadan Island. September 28,
1909. Length 148 mm.

A 456. Tuluatan Island. September
9, 1909. Length 156 mm.

671. Waitara Island. November 26,
1909. Length 120 mm.

4828. Sadaa Island, Celebes. November
17, 1909. Length 71 mm.

481 and A 1052. Tidore Island, south
of Ternate. November 24, 1909. Length
133 to 145 mm.

11683 U.S.N.M. Kafa, Okinawa, Riu
Kiu. Albatross Collection. Length 122 mm.

20510 U.S.N.M. Hawaiian Islands.
A. B. Steinberger. Length 178 mm.

52318 U.S.N.M. Apia, Samoa. Bureau
of Fisheries. Length 108 to 145 mm. 3 examples.

52816 U.S.N.M. Hawaii. Bureau of Fisheries.

53479 U.S.N.M. Honolulu. Fur Seal
Commission. Length 172 mm.

851

Eleginus navaga (Koebreuter)

Gadus navaga Koebreuter, Nov. Comm. Acad. Petropol., vol. 14, p. 484, pl. 12, 1770 (type locality: coast of northern Russia). — Pallas, Zoogr. Ross. Asiat., vol. 3, p. 196, 1811 (Arctic seas; Russia; Ob River mouth). —

Günther, Cat. Fishes Brit. Mus., vol. 4, p. 330, 1862 (White Sea). — Gill, Proc. Acad. Nat. Sci. Philadelphia, p. 251, 1863 (reference).

Eleginus navaga Gill, Proc. U. S. Nat. Mus., vol. , p. 303, 1890 (). —

Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 3, p. 2537, 1898 (Port Clarence; Petropaulski). — Evermann and Goldsborough, Bull. Bur. Fisher., vol. 26, p. 347, fig. 128, 1906 (1907) (Puget Sound; Alaska; Kamchatka). — Franz, Abhandl. Kon. Bayer. Akad. Wiss. Vol. 4, Suppl. band 1, p. 30, 1910

852

(Fukura). — Snyder, Proc. U. S. Nat.
Mus., vol. 42, p. 450, 1912 (Otaru). —
Jordan, Tanaka, Snyder, Journ. College
Sci. Tokyo, vol. 33, art. 1, p. 407, 1913
(Arctic Ocean, Bering Sea, Decatur
Bay, Hokkaido).

Gadus gracilis Tilesius, Mém. Acad.
Sci. St. Pétersbourg, vol. 2, p. 354, 1810
(type locality: Kamchatka). — Gill,
Proc. Acad. Nat. Sci. Philadelphia,
p. 251, 1863 (compiled).

Gadus wachna Pallas, Zoogr. Ross.
Asiat., vol. 3, p. 182, pl. 44, 1811 (type
locality: Kamchatka; America).

Genus Gadus Linnaeus

853

Gadus Linnaeus, Syst. Nat., ed. 10, vol. 1, p. 251, 1758. (Type Gadus callarias Linnaeus, designated by Jordan and Gilbert, Bull. U. S. Nat. Mus., No. 16, p. 803, 1882.)

Morru Aken, Isis, p. 1183, 1817 (on Les Morruës Cuvier, Règne Animal, vol. 2, p. 212, 1817). (Type Gadus morruha Linnaeus, designated by Jordan and Evermann, Genera of Fishes, pt. 1, p. 100, 1917.)

Cephus Swainson, Nat. Hist. Animals, vol. 2, p. 300, 1839. (Type Gadus macrocephalus Tilaxius, monotypic.)

Body moderately long, compressed, tapering behind. Head narrowed in front. Mouth moderate. Maxillary reaches past front of eye. Mandibular barbel present. Teeth in jaws partly equal, cardiform. Vomer with teeth, none on palatines. Cranium with expanded crests and no part of skeleton expanded or ivory like. Scales very small. Lateral line present. Dorsals 3, well separated. Anals 2. Ventrals well developed, rays 7.

Species few, of the northern seas and all highly valued as food fishes. The name cod in Middle English means a shell, husk or bolster.

269

at vertical edge, joins fourth oblique orange stripe; beneath fin pale soiled yellowish. Anal edge dark brown; inframarginal sulphur yellow bar continued on spinous portion occupying body of membranes; bronze orange bar through center of anal limited by blackish. Caudal very pale yellow with black median band and another submarginal to narrow hyaline edge. Pectoral rays pale dusky orange. Ventral pale orange.

7390. Port Caltoan, Busuanga Island.

December 15, 1908. Length 153 mm.

^{and 20435.}
720₁ Port Palapag. June 3, 1909. Length
93 to 120 mm.

1049. Sabtan Island. November 8, 1908.
Length 148 mm.

A 630. Vimalue Island. September 22,
1909. Length 154 mm.

855

Gadus macrocephalus Tilesius

Gadus macrocephalus Tilesius, Mem.
Acad. Sci. St. Petersb., vol. 2, p. 360,
1810 (type locality: Bering Sea). —

Günther, Cat. Fishes Brit. Mus., vol. 4,
p. 330, 1862 (compiled). — Gill, Proc.
Acad. Nat. Sci. Philadelphia, 1863,
p. 251 (reference). — Garman, Mem.

Mus. Comp. Zool., vol. 24, p. 393, 1899
(reference). — Jordan and Starks,
Proc. U. S. Nat. Mus., vol. 31, p. 526,
1906 (Port Arthur, Manchuria). —

Jordan, Tanaka, Snyder, Journ. College
Sci. Tokyo, vol. 33, part. 1, p. 406, 1913
(Bering Sea; Kuriles; Robben Island;
Kamchatka; Hokkaido; Saghalien). —

Jordan and Hubbs, Mem. Carnegie Mus.,
vol. 10, no. 2, p. 326, June 27, 1925 (Osaka;
Kushiro).

856

Gadus pygmaeus Pallas, Zool. Ross.
Asiat., vol. 3, p. 199, 1811 (type locality:
Kamchatka).

Gadus auratus Cope, Proc. Amer.
Philos. Soc., Philadelphia, vol. 13, p.
30, 1873 (type locality: Alaska).

? Gadus pseudomorrhua Bleeker,
Nederl. Tijdschr. Dierk., vol. 4,
p. (130) 151, 1873 (1874) (type locality:
China).

857

Genus Tripterophyscis Boulenger

Tripterophyscis Boulenger, Ann. Mag. Nat. Hist., Ser. 7, vol. 19, p. 335, 1902.
(Type Tripterophyscis gilchristi Boulenger, monotypic.)

Body elongate, tapering posteriorly. Snout short. Eye large. Mouth rather small, lower jaw shorter than upper. Maxillary reaches middle of eye. Mandibular barbel present. Teeth uniserial in both jaws, close set, chisel shaped. No teeth on vomer and palatines. Gill rakers long and slender. Branchiostegals 7. Scales small, cycloid. Dorsals three, first small, second short and rather high, behind level of vent, third elongate and low, far back. Anal single, elongate, nearly uniformly high. Caudal small, obtusely pointed. Ventrals reduced, rays 5 and two outermost elongate and filamentous. Vent premedian, well advanced.

858

Tripteryphycis gilchristi Boulenger

Tripteryphycis gilchristi Boulenger,
Ann. Mag. Nat. Hist., ser. 7, vol. 9, p.
335, fig., 1902 (type locality: some 40
miles off Table Mountain, South Africa;
250 fathoms); ser. 7, vol. 9, p. 168, pl.
12, 1903(). — Brauer,

Deutsch. Tiefsee Exped. Valdivia, vol. 15,
p. 275 (394), fig. 171, 1906 (lat. $6^{\circ}54'N.$,
long. $93^{\circ}28'8''$, 296 meters). — Gilchrist,

Fisher. Mar. Biol. Surv. South Africa,
Rep. no. 2, p. 64, 1922 (natal coast, 165 to
324 fathoms). — Barnard, Ann. South

African Mus., vol. 21, pt. 1, p. 329, June
1924 (off Cape Point, 150 to 250 fathoms).
— Weber and Beaufort, Fishes Indo
Austral. Archip., vol. 5, p. 11, fig. 4,
1929 (copied).

Genus Mora Risso

859

Mora Risso, Hist. nat. Eur. Mériid.,
vol. 3, p. 224, 1826. (Type Mora
mediterranea Risso = Gadus mora Risso,
monotypic.)

Asellus (not St. Hilaire 1764) Valenciennes,
Hist. nat. Canaries, vol. 2, pt. 2, p. 76, 1836-
44. (Type Asellus canariensis Valenciennes
= Gadus mora Risso, monotypic.)

Body moderately long, tail tapering
moderately. Head rather small. Snout
convex. Eye large, advanced. Mouth
large, subinferior, oblique, lower jaw
included. Teeth cardiform, equal, in
pairs, on vomer and palatines, those of
upper jaw in bands. Mandibular
barbel present. Gill openings large.
Branchiostegals 7. Scales moderate,
cover head and trunk. Dorsals separate,
prominent, as short anterior fin and long
posterior. Anals 2, widely separated.
Caudal forked. Ventral rays 6.

mora mora (Risso)

Gadus mora Risso, Ichth. Nice, p. 116, 1810
(type locality: Nice).

mora mora Garman, Mem. Mus. Comp. Zool.,
vol. 24, p. 393, 1899 (reference). — Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 15, p.
393, 1906 (reference). — Murray and Hjort,
Depths of the Ocean, p. 400, fig. 278 (copied)
(off southern England; Morocco, Canaries;
923 to 1365 meters).

mora mediterranea Risso, Hist. nat. Eur.
Mér. id., vol. 3, p. 224, 1826 (type locality:
Nice). — Bonaparte, Fauna Italica, Pesci.
pt. 1, fasc. 23, no pagination, pl., fig.
1, (Italy). — Lowe, Proc. Zool. Soc.
London, vol. 11, p. 91, 1843 (off Magdalena,
15 leagues west of Lunchal, 300 to 400
fathoms). — Günther, Cat. Fishes Brit.
Mus., vol. 4, p. 341, 1862 (Mediterranean;
Madeira). — Steindachner, Sitzb. Ber.
Akad. Wiss. Wien, math.-nat. Kl., vol.
57, p. 2, p. 707, 1868 (Canaries). — Canestrini,

861

Fauna Italia, Pesc., p. 155, 1875. —
Rochebrune, Faune Senegambie, Poiss.,
p. 114, 1883-85 (Cape Blanco; Portendik;
Guet h'Dar; Argain). — Vaillant,
Expéd. Sci. Travailleur et Talisman,
Poiss., p. 298, pl. 25, figs. 6-a, 1888
(off Canaries; Morocco; 622 to 1180 meters).
— Goode and Bean, Oceanic Ichth.,
pp. 369, 531, pl. 92, fig. 322, 1895
(compiled).

Asellus canariensis Valenciennes, Hist.
Nat. Canaries, vol. 2, Pt. 2, p. 76, pl. 14,
fig. 3, 1836-44 (type locality: Canary
Islands).

Pharopteryx benoit Rüppell, Verzeich.
Mus. Senckenberg., Fische, p. 16, 1852.

862
Mora pacifica Waite

Mora pacifica Waite, Trans. New Zealand
Inst., vol. 46, p. 128, pl. 5, 1913 (June 15,
1914) (type locality: Kaikoura).

263

Genus Lepidion Swainson

Lepidion Swainson, Nat. Hist. Animals, vol. 2, p. 300, 1839. (Type Lepidion rubescens Swainson = Gadus lepidion Risso, tautotypic.) (Lepidia Savigny 1817 not involved.)

Haloporphyrus Günther, Cat. Fishes Brit. Mus., vol. 4, p. 358, 1862. (Type Gadus lepidion Risso, monotypic.)

Salilota Günther, Rep. Voy. Challenger, vol. 22, p. 95, 1887. (Type Haloporphyrus australis Günther, monotypic.)

Body oblong, elongate. Head thick, rather compressed. Snout short, bluntly conic. Mouth moderate, lower jaw shorter than upper. Maxillary reaches below eye. Teeth villiform, of equal size in jaws and slender, present on vomer, none on palatines. Mandibular barbel present. Gill rakers slender. Branchiostegals 7. Abdominal cavity extends far behind vent. Pyloric coeca very long, 10 to 17. Scales small, cycloid. Two dorsals, first fin with 4 to 9 rays. Hind rays of second dorsal and anal highest. One anal fin.

Black narrow band submarginally along dorsal, then down vertically along hind eye edge to gill opening; also 2 black vertical lines parallel on head, first from suprascapula down along and behind preopercle edge and other along hind opercle edge shorter. Black band over front of snout and down across throat, with yellow marginal line in front and behind. Upper lip yellow forming broad yellow band across chin leaving lower lip black. Interorbital brown. Edge of soft dorsal with narrow black line. Anal likewise, then submarginal broad buff line or band against which another black line. Caudal with very narrow whitish edge, broader deep brown submarginal band against which broad buff band, then broad black transverse median band. Paired fins pale brownish.

East Indies, Polynesia, Hawaii.
Examples vary, at sometimes the bands may be asymmetrically broken.
Not small examples but 6 small and broader, dark bands and dark bands on caudal closer and median on fin.

8739. Agaña Port, Catanduanes Island. June 10, 1909. Length 147 mm.

Caudal rounded or subtruncate,
separate from dorsal or anal.
Ventrals with narrow or wide
base, rays 6 to 8.

Deep sea fishes of the
North and South Atlantic,
Mediterranean, and Pacific.

245

Depth $1\frac{1}{3}$ to $1\frac{2}{3}$; head 3 to $3\frac{1}{4}$, width $1\frac{4}{5}$ to 2. Snout 3 to $3\frac{1}{8}$ in head from snout tip; eye $2\frac{4}{5}$ to $3\frac{2}{3}$, greater than snout in young to $1\frac{1}{4}$ with age, 1 to $1\frac{2}{3}$ in interorbital; maxillary $\frac{3}{4}$ or to eye, $3\frac{1}{8}$ to $3\frac{3}{4}$ in head; interorbital $2\frac{2}{3}$ to $2\frac{4}{5}$, broadly convex. Gill rakers 5 + 14, short & points, $\frac{1}{8}$ of gill filaments, which $1\frac{1}{4}$ in eye.

Scales 43 to 49 between gill opening and caudal base; tubes 43 to 43 in lateral line; 10 to 12 scales above lateral line, 24 or 25 below. Scales with 8 to 10 basal radiating striae; apical denticles 48 to 108, with 8 to 9 series of transverse basal elements; circuli fine.

D, XIII, 24, I or 25, I, last spine $1\frac{2}{5}$ to $1\frac{7}{8}$ in ^{total} head, ^{length} tenth ray $1\frac{1}{10}$ to $1\frac{2}{5}$; A, III, 20, I or 21, I, last spine $1\frac{3}{5}$ to 2, tenth ray $1\frac{1}{3}$ to $1\frac{1}{2}$; least depth of caudal peduncle $2\frac{2}{5}$ to $2\frac{5}{6}$; caudal $1\frac{2}{5}$ to $1\frac{1}{2}$, broadly convex behind; pectoral 1 to $1\frac{1}{3}$; ventral 1 to $1\frac{1}{5}$.

Brown generally, with broad yellowish-brown bands, slightly sloping down forward, longitudinally, also each margined by slightly grayish line. Black supraoccipital band down to eye, then down across cheek to breast where meeting its fellow, with much less than eye and front and hind edges each with sulphur yellow line.

866

Lepidion capense Gilchrist

Lepidion capense Gilchrist, Fisher.
Mar. Biol. Surv. South Africa,
Rep. No. 2, p. 61, 1922 (type locality:
Natal coast, 312 to 417 fathoms). —

Barnard, Ann. South African Mus.,
vol. 21, pt. 1, p. 324, pl. 13, fig. 1, June
1925 (off Table Bay; Cape Point; East
London; 250 to 630 fathoms).

Lepidion guntheri (Giglioli) 867

Haloporphyrus guntheri Giglioli, Nature,
vol. 21, p. 202, Jan. 1, 1880 (~~type locality:~~
~~Gulf of Genoa~~, 900 meters; ~~Risso~~;
Ann. Mus. Civ. Stor. Nat. Genova, vol.
18, p. 558.
on Günther 1862)

Haloporphyrus guentheri Günther, Rep.
Voy. Challenger, vol. 22, p. 90, pl. 18,
fig. 11, 1887 (Madeira).

Haloporphyrus güntneri Vaillant, Rés.
Camp. Sci. Monaco, vol. 52, p. 134, 1919
(lat. $38^{\circ}26'N$, long. $26^{\circ}30'45''W$, 1165
meters).

Lepidion guntheri Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, p. 394,
1906 (reference).

Haloporphyrus lepidion (not Risso) Günther,
Cat. Fishes Brit. Mus., vol. 4, p. 358, 1862
(^{type locality:} Madeira). — Johnson, Ann. Mag. Nat. Hist., vol.
10, p. 166, 1862 (Madeira)!

Lepidion eques (Günther)

868

Haloporphyrus eques (Günther), Rep.
Voy. Challenger, vol. 22, p. 91, pl. 18,
fig. B, 1887 (type locality: Faroe
Channel, 530 fathoms).

Lepidion eques (Garman), Mem. Mus.
Comp. Zool., vol. 24, p. 393, 1899 (reference).
— Brauer, Deutsch. Tiefsee Exped.
Valdivia, vol. 15, p. 394, 1906 (reference).

— Murray and Hjort, Depths of the Ocean,
p. 400, fig. 280 (copied), 1912 (Faroe-
Channel; Faroe Bank; 750 meters).

869

Lepidion ensiferum (Günther)

Haloporphyrus ensiferus Günther,
Rep. Voy. Challenger, vol. 22, p. 92,
pl. 19, fig. A, 1887 (type locality:
mouth of Rio Plata, 600 fathoms).

Lepidion ensiferus Garman, Mem. Mus.
Comp. Zool., vol. 24, p. 393, 1899 (reference).
— Brauer, Deutsch. Tiefsee Exped.
Valdivia, vol. 15, p. 394, 1906 (reference).

870

Lepidion inosimal (Günther)

Halaporphyrus inosimal Günther,
Rep. Voy. Challenger, vol. 22, p. 92, pl.
20, fig. b (type locality: Inosima,
Japan, 345 fathoms). — Franz,

Abhandl. Kon. Bayer. Akad. Wiss.,
vol. 4, Suppl. band 1, p. 29, 1910
(Aburatsubo).

Lepidion inosimal Goode and Bean,
Oceanic Ichth., p. 531, 1895 (copied).
— Garman, Mem. Mus. Comp. Zool.,
vol. 24, p. 393, 1899 (reference). —

Brauer, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, p. 394, 1906 (reference). — Jordan,
Tanaka, Snyder, Journ. College Sci.
Tokyo, vol. 33, art. 1, p. 408, 1913
(copied).

871

Lepidion lepidion (Risso)

Gadus lepidion Risso, Ichth. Nice,
p. 118, pl. 11, fig. 40, 1810 (type locality:
Nice).

Haloporphyrus lepidion Giglioli,
Nature, 21, p. 202, Jan. 1, 1880
(Gulf of Genoa, 900 meters); Ann. Mus. Civ. Stor.
Nat. Genova^{Nice}, vol. 18, p. 554, pl. 3,

— Günther, Rep. Voy. Challenger, vol.
22, p. 91, 1887 (Nice).

Lepidion lepidion Garman, Mem.
Mus. Comp. Zool., vol. 24, p. 393, 1899
(reference). — Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, p.
394 (reference).

872

Lepidion modestum (Franz)

Haloporphyrus modestus Franz,
Abhandl. Kon. Bayer. Akad. Wiss.,
vol. 4, Suppl. band 1, p. 28, pl. 4, fig.
13, 1910 (type locality: Yokohama).

Lepidion modestus Jordan, Tanaka, Snyder,
Journ. College Sci. Tokyo, vol. 33, art.
1, p. 408, 1913 (compiled).

873

Lepidion natalensis Gilchrist

Lepidion natalensis Gilchrist, Fisher.
Mar. Biol. Surv. South Africa,
Rep. no. 2, p. 62, 1922 (type locality:
Natal coast, 324 fathoms). —

Barnard, Ann. South African Mus.,
vol. 21, pt. 1, p. 324, June 1925 (types).

Lepidion oidema (Tanaka)

874

Haloporphyrus oidema Tanaka,
Fig. Descript. Fishes Jap., vol. 41,
p. 796, pl. 171, fig. 472, Dec. 23, 1927
(type locality: Off Misaki, Province
of Sagami, 510 fathoms).

875

Lepidion verecundum Jordan and Cramer

Lepidion verecundum Jordan and Cramer,
Proc. U. S. Nat. Mus., Vol. 19, p. 456,
1896 (type locality: near Clarion Island,
Revillagigedo Group, Mexico, 364 fathoms).

— Jordan and Evermann, Bull. U. S. Nat.
Mus., no. 47, pt. 3, p. 2543, 1898 (type).

Genus Halargyreus Günther

Halargyreus Günther, Cat. Fishes Brit. Mus., Vol. 4, p. 342, 1862. (Type Halargyreus johnsonii Günther, monotypic.)

Body elongate. Head rather long, compressed. Snout obtusely conic. Mouth cleft wide, jaws equal in front. Maxillary reaches below hind part of eye. Teeth minutely villiform, in bands in jaws, none on palate. Pseudobranchiae glandular, rudimentary, covered by membrane. Branchiostegals 7. Scales small. Dorsals 2. Anals 2, subcontinuous. Caudal separate. Ventral rays several.

Halargyreus affinis Collett

Halargyreus affinis Collett, Forh. Vet.
Selsk. Christiania, 1904, no. 9, p. 6 (type
locality: Faroe Banks, 750 to 1200 meters).
— Brauer, Deutsch. Tiefsee Exped.
Valdivia, vol. 15, p. 394, 1906 (reference).

— Murray and Hjort, Depths of the Ocean,
p. 401, fig. 281 (copied), 1912 (Faroe
Banks, 750 meters).

Halargyreus brevipes Vaillant

Halargyreus brevipes Vaillant, Expéd.
Sci. Travailleur et Talisman, Poiss.,
p. 295, pl. 25, fig. 5, 1888 (type
locality: off Morocco, 1319 meters).

— Goode and Bean, Oceanic Ichth.,
p. 375, pl. 93, fig. 325, 1895 (compiled).

— Garman, Mem. Mus. Comp. Zool., vol.
24, p. 393, 1899 (reference). — Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 15,
p. 394, 1906 (reference).

879

Halargyreus johnsonii Günther

Halargyreus johnsonii Günther, Cat.

Fishes Brit. Mus., vol. 4, p. 342, 1862

(type locality: Madeira; from stomach of Saccopharynx). — Hutton, Fishes

of New Zealand, p. 45, 1872 (Cook Straits). — Günther, Rep. Voy.

Challenger, vol. 1, pt. 4, p. 26, 1880

(New Zealand); vol. 22, p. 83, 1887

(copied). — Goode and Bean, Oceanic

Ichth., ppi. 376, 531, 1895 (compiled). —

Brauer, Deutsch. Tiefsee-Exp. Valdivia,

vol. 15, p. 394, 1906 (reference). — Waite,

Rec. Canterbury Mus., vol. 1, no. 1, p. 18,

April 25, 1907 (reference).

Halargyreus johnsoni Garman, Mem.

Mus. Comp. Zool., vol. 24, p. 393, 1899

(reference). — Brauer, Deutsch. Tiefsee

Exp. Valdivia, vol. 15, p. 394, 1906

(reference).

Genus Bregmaceros Cantor

Bregmaceros Cantor, in Thompson,
London Mag. Nat. Hist. Charlesworth,
 new ser., vol. 4, p. 184, April 1840.
 (Type Bregmaceros mcclllandii
Cantor, monotypic.)

Calloptilum Richardson, Zool. Voy.
Sulphur, Ichth., p. 94, 1844. (Type
Calloptilum mirum Richardson,
 monotypic.)

Asthenurus Tickell, Journ. Asiatic
Soc. Bengal, vol. 34, p. 32, 1865.
 (Type Asthenurus atripinnis Tickell,
 monotypic.)

Body moderately long, fusiform,
 compressed posteriorly. Head small,
 somewhat compressed. Snout short.
 Eyes lateral. Mouth small, oblique,
 terminal, jaws subequal. Teeth
 movable, minute, in jaws and on
 vomer, none on palatines. Gill openings

very wide, membranes united below throat, not joined to interorbital. No pseudobranchiae. Branchiostegals 7. Air bladder large. Two wide pyloric coeca. Scales cycloid, deciduous, moderate. No lateral line. Fins without spines. Two dorsals; first of single long occipital ray; second long, begins opposite anus at about end of first third in body length, formed of front and hind elevated portion connected by series of low short detached spines. With age both dorsal and anal more depressed. medially or middle ray obsolete. Anal similar. Caudal more or less emarginate, well separated from vertical fins. Pectorals small, midway in body height. Ventrals jugular, their origins apposed, of 5 rays with outer extremely elongate.

Small tropical coast fishes, also living in the open sea, from the surface to 500 meters depth.

882

Bregmaceros atlanticus Goode and Bean

Bregmaceros atlanticus Goode and Bean,
Bull. Mus. Comp. Zool., vol. 12, no. 5, p.
165, 1886 (type locality: off Grenada;
off heris; lat. $25^{\circ}33'N$, long. $84^{\circ}21'W$;
90 to 305 fathoms); Oceanic Ichth., p.
388, pl. 95, fig. 331, 1895 (above materials).

— Jordan and Evermann, Bull. U. S. Nat.
Mus., no. 47, pt. 3, p. 2527, 1898 (compiled).

— Garman, Mem. Mus. Comp. Zool., vol.
24, p. 394, 1899 (reference). — Jordan,
Evermann, Clark, Rep. Comm. Fisher. U. S.,
pt. 2, p. 208, 1930 (reference).

883

Bregmaceros bathymaster Jordan and
Bollman

Bregmaceros bathymaster Jordan and
Bollman, Proc. U. S. Nat. Mus., vol.
12, p. 173, 1889 (1890) (type locality:
lat. $8^{\circ}16'N.$, long. $16^{\circ}30'W.$, Pacific coast
South America). — Jordan, Evermann,
Clark, Rep. Comm. Fisher. U. S., pt. 2,
p. 208, 1930 (compiled).

Bregmaceros maclellandii (not Cantor)
Jordan and Evermann, Bull. U. S. Nat.
Mus., no. 47, pt. 3, p. 2526, 1898 (types
of Bregmaceros bathymaster).

Bregmaceros longipes Garman

Bregmaceros longipes Garman, Mem. Mus.
Comp. Zool., vol. 24, p. 191 (394), pl. 43,
figs. 6-9, 1899 (type locality: lat. 16°
 $47'30''$ N., long. $99^{\circ}59'20''$ W., off Acapulco,
94 fathoms). — Jordan, Evermann,

Clark, Rep. U. S. Comm. Fisher., pt. 2,
p. 208, 1930 (reference).

885

Bregmaceros maclellandii Cantor

Bregmaceros maclellandii Cantor, in
Thompson, Ann. Mag. Nat. Hist.,
Charlesworth, vol. 4, p. 184, fig., 1840
(type locality: Brackish water of
Gangetic Delta). — Fowler, Mem.

Bishop Mus., vol. 10, p. 87, 1928 (compiled).
— McCulloch, Austral. Mus. Mem.,
no. 5, pt. 1, p. 130, June 29, 1929 (north
and north west Australia).

Bregmaceros maclellandii Günther, Cat.
Fishes Brit. Mus., vol. 4, p. 368, 1862
(China Sea); Rep. Voy. Challenger,
vol. 31, pt. 2, p. 25, pl. 3, figs. A-B,
1889. — Goode and Bean, Oceanic

Ichth., p. 388, 1895 (reference). —
Alcock, Cat. Deep Sea Fishes Ind. Mus.,
p. 75, 1899 (Bengal Bay; Andamans;
Malabar; 10 to 250 fathoms). — Weber,
Siboga Exped., vol. 57, p. 174, 1913
(Maddura Sea; Bima Bay; Molo

Strait; Borneo Bank; north Celebes;
Molucca Passage; Halmahera Sea;
Waigiu; west Ceram; Sula-Besi;
Banda Sea; between Wowoni-Buton;
Buton Strait; between south Celebes-
Saleyer; Ambon; Kei Islands; Savu
Sula; north Sumbawa; Flores Sea;
22 to 1500 meters).

Bregmaceros maclellandi Day, Fishes
of Malabar, p. 177, 1865; Fauna of
British India, Fishes, vol. 2, p. 433,
1889. — Garman, New. Mus. Comp.
Zool., vol. 24, p. 394, 1899 (reference). —

Weber and Beaufort, Fishes Indo
Austral. Archip., vol. 5, p. 6, fig. 2,
1929 (Weber's materials).

Bregmaceros maclellandi Bleeker, Nederl.
Tijdschr. Dierk., vol. 4, p. 130, 1873
(1874) (reference). — Day, Fishes of
India, pt. 3, p. 418, 1877 (India; China;
Philippines); Fauna of British India,
Fishes, vol. 2, p. 433, fig. 151, 1889 (copied).

887

Bregmaceros maclellandii Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 3, p. 2526, 1898 (part). — Barnard, Ann. South African Mus., vol. 21, pt. 1, p. 325, June 1925 (Agulhas Bank to Natal; 30 to 185 fathoms).

Bregmaceros maclellandii Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, p. 319, May 21, 1917 (compiled).

Calloptilum mirum Richardson, Zool. Voy. Sulphur, Ichth., p. 95, pl. 46, figs. 4-7, 1844 (type locality: China Seas?).

Asthenurus atripinnis Tickell, Journ. Asiatic Soc. Bengal, vol. 34, p. 32, pl. 1, 1865 (type locality: Burma).

Bregmaceros atripinnis Day, Proc. Zool. Soc. London, p. 522, 1869 (April 7, 1870) (Burma); Fishes of India, pt. 3, p. 418, pl. 91, fig. 1, 1877.

Bregmaceros japonicus Tanaka,
[not located]

— Jordan and Thompson, Mem. Carnegie Mus., vol. 6, no. 4, p. 304, Sep. 1914 (Misaki). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, p. 326, June 27, 1925 (Toyana).

889

Genus Anchenoceros Günther

Anchenoceros Günther, Rep. Voy.
Challenger, vol. 31, pt. 2, p. 24, 1889.
(Type Calloptilum punctatum Hutton,
monotypic.)

Body compressed, elongate. Head small, compressed, greater than trunk. Snout short. Eye moderate, anterior. Mouth large, terminal. Teeth villiform, in bands in jaws, none on palate. Gill openings wide, membranes not attached to isthmus. Pseudobranchiae none. Air bladder small. Pyloric coeca 8. Scales small, very delicate, deciduous. Two dorsals, anterior reduced to single ray from nape above pectoral, second fin more or less depressed in middle, one anal, long and low. Caudal small, free. Pectorals moderate, in upper half of body depth. Ventrals rudimentary, each of 2 long slender rays.

890

Anchenoceros punctatus (Hutton)

Calloptilum punctatum Hutton, Trans.
New Zealand Inst., vol. 5, p. 265, pl. 11,
fig. 76a, 1872 (1873) (type locality:
mouth of River Thames; and Cape
Campbell).

Bregmaceros punctatus Günther, Ann.
Mag. Nat. Hist., ser. 4, vol. 17, p. 398,
1876 (Cook Strait, New Zealand).

Anchenoceros punctatus Günther, Rep.
Voy. Challenger, vol. 31, pt. 2, p. 26, pl. 3,
fig. C (New Zealand). — Waite, Rec.
Canterbury Mus., vol. 1, no. 1, p. 18, April
25, 1907 (reference).

891

Genus Antimora Günther

Antimora Günther, Ann. Mag. Nat. Hist., ser. 5, vol. 2, p. 18, July 1, 1878. (Type Halaporphyrus rostratus Günther, monotypic.)

Body elongate. Snout conic, depressed, sharply beveled at sides, projects over mouth. Mouth rather large, lower jaw shorter than upper. Maxillary reaches below hind part of eye. Teeth in villiform bands in jaws. Vomerine teeth in small rounded patch, none on palatines. Mandibular barbel present. Muciferous channels on side of head well developed, cranial bones not solidified. Pseudobranchiae none. Branchiostegals 7. Pyloric coeca long, in moderate number. Scales small. Two dorsals, first of 4 or 5 rays, scarcely separated from second fin and first ray elongate. One anal, with long deep median depression. Caudal truncate. Ventrals narrow, rays 6. Vent postmedian.

892

Antimora australis Barnard

Antimora australis Barnard, Ann.
Mag. Nat. Hist., ser. 9, vol. 15, p. 499,
1925 (type locality: off Cape Point);
Ann. South African Mus., vol. 25,
pt. 1, p. 321, June 1925 (types).

893

Antimora microlepis J. H. Bean

Antimora microlepis J. H. Bean, Proc. U. S. Nat. Mus., vol. 13, p. 38, 1890 (type locality: Cape St. James, Queen Charlotte Islands, 876 fathoms). — Goode and

Bean, Oceanic Ichth., p. 531, 1895 (reference). — Garman, Mem. Mus. Comp. Zool., vol. 24, p. 394, 1899 (reference). — Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, p. 656, 1903 (1905) (Kauai, 1000 to 1314 fathoms). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 394, 1906 (reference). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 407, 1913 (reference). — Fowler, Mem. Bishop Mus., vol. 10, p. 88, 1928 (compiled).

Antimora mikrolepis Franz, Abhandl. Kon. Bayern. Akad. Wiss., vol. 4, Suppl. Band 1, p. 29, 1910 (Aburatsubo).

Antimora rhina Garman .

894

Antimora rhina Garman, Mem. Mus.
Comp. Zool., vol. 24, p. 185 (394), 1899
(type locality: Gulf of Panama;
695 to 1020 fathoms). — Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, p. 394, 1906
(reference).

895

Antimora rostrata (Günther)

Haloporphyrus rostratus Günther,
Ann. Mag. Nat. Hist., ser. 5, vol. 2, p. 18,
1878 (type locality: deep sea midway
between Cape of Good Hope and
Kerguelen's Land; east of mouth of
Rio Plata; 600 to 1375 fathoms).

Antimora rostrata Günther, Rep. Voy.
Challenger, vol. 22, p. 92, pl. 16, fig. 1A,
1887 (types). — Goode and Bean, Oceanic

Ichth., p. 375, 1895 (copied). — Garman,
Mem. Mus. Comp. Zool., vol. 24, p. 393,
1899 (reference). — Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, p. 394,
1906 (reference).

896

Antimora viola (Goode and Bean)

Halaporphyrus viola Goode and Bean,
Proc. U. S. Nat. Mus., vol. 1, p. 257,
1878 (1879) (type locality: outer edge
Le Have Bank, north west Atlantic,
400 to 500 fathoms).

Antimora viola Günther, Rep. Voy.
Challenger, vol. 22, p. 94, pl. 15, 1887
(lat. $43^{\circ}41'N$, long. $59^{\circ}15'W$). —

Goode and Bean, Oceanic Ichth., p. 372,
pl. 93, fig. 324, 1895 (lat. 33° to $41^{\circ}N$, long.
 65° to 75° , 306 to 1434 fathoms). —
Garman, Mem. Mus. Comp. Zool., vol. 24,
p. 393, 1899 (reference). — Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, p. 394, 1906 (reference). — Mc Culloch,
Austral. Mus. Mem., no. 5, pt. 1, p. 129,
June 20, 1929 (Tasmania).

897

Genus Eulichthys McCulloch

Eulichthys McCulloch, Biol. Res.
Endeavour, vol. 5, pt. 4, p. 174, June
8, 1926. (Type Eulichthys polynemus
McCulloch, orthotypic.)

Body elongate, compressed. Head compressed, with broad septate canals covered by membrane, upper profile curved. Snout rather obtuse. No mandibular barbel. Band of villiform teeth in each jaw. Palate toothless. Gill opening ^{for} forward, membranes joined across isthmus. Gill rakers about 19 below, long, slender. Pseudobranchiae rudimentary, covered with membrane. Branchiostegals 7. Scales moderate, deciduous. Two dorsals, interspace very narrow, first fin high with numerous rays and second not deeply incised. Anal divided in two, first short and high, followed by long series of short rays, increasing in length backward. Caudal free. Pectorals

pointed, over half of head. Ventrals with narrow bases, each of 5 filamentous rays of which anterior divided in two.

Related to *Halargyreus*, differing in the anal fin almost divided into two instead of notched. Also differs in form of its ventrals.

Eulichthys polynemus McCulloch

Eulichthys polynemus McCulloch,
Biol. Res. Endeavour, vol. 5, pt. 4, p.
174, pl. 44, fig. 2, June 8, 1926 (type
locality: Great Australian Bight,
190 to 450 fathoms); Austral. Mus.
Mem., no. 5, pt. 1, p. 129, June 29, 1929
(reference).

899

Genus Lotella Kaup

Lotella Kaup, Archiv naturges., vol. 24, pt. 1, p. 88, 1858. (Type Lotella schlegelii Kaup, monotypic.)

Body moderately long. Mandibular barbel present. Upper teeth in band and with outer series of larger ones. No vomerine or palatine teeth. Branchiostegals 7, or 6? Scales small. Two dorsals. One anal. Caudal separate from vertical fins. Ventral fins with flat base and each with several rays.

Lotella callarias Günther

900

Lotella callarias Günther, Ann. Mag. Nat. Hist., ser. 3, vol. 11, p. 116, Jan. 1, 1863 (type locality: Victoria, Australia). — McCoy, Prodr. Zool. Victoria, dec. 2, pl. 19, 1878. — Ogilby, Austral. Mus. Mem., no. 2, p. 70, 1889 (Lord Howe Island); Proc. Linn. Soc. New South Wales, vol. 23, p. 745, 1899 (Lord Howe Island). — Waite, Rec. Austral. Mus., vol. 5, pt. 3, p. 225, March 11, 1904 (compiled). — McCulloch, Austral. Mus. Mem., no. 5, pt. 1, p. 128, June 29, 1929 (compiled).

Lotella schuettei Steindachner, Sitzs. Ber. Akad. Wiss. Wien, ^{math.} naturw. Kl., vol. 53, p. 466, pl. 3, fig. 1, 1866 (type locality: Port Jackson, Australia).

Lotella marginata (not Günther 1878) Macleay, Proc. Linn. Soc. New South Wales, vol. 6, p. 114, 1881 (type locality: Port Jackson).

? Lotella swanii Johnston, Pap. Proc.
Roy. Soc. Tasmania, p. 126, 1882 (1883)
(type locality: Tasmania).

Lotella limbata Ogilby, Cat. Fishes New South Wales, p. 47, 1886 (on Lotella marginata Macleay).

Lotella macleayi Rendahl, Nat. Hist.
Juan Fernandez and Easter Island,
Shottsberg, vol. 3, p. 54, 1920 (on
Lotella marginata macleay).

902

Lotella fuliginosa Günther

Lotella fuliginosa Günther, Cat. Fishes
Brit. Mus., vol. 4, p. 347, 1862 (type
locality: locality? [= Sydney, New
South Wales]). — Goode and Bean,
Oceanic Ichth., p. 369, 1895 (reference).

— McCulloch, Austral. Mus. Mem.,
no. 5, pt. 1, p. 128, June 29, 1929 (reference).

Lotella rubiginosa Castelnau, Proc. Linn.
Soc. New South Wales, vol. 3, p. 354,
1879.

Lotella marginata Günther

903

Lotella marginata Günther, Ann. Mag. Nat. Hist., Ser. 5, vol. 2, p. 19, 1878 (type locality: Pacific coast of south western South America, 120 to 345 fathoms); Rep. Voy. Challenger, vol. 22, p. 86, pl. 14, fig. A, 1887 (Magellan Strait; Messier Channel; 125 to 345 fathoms). — Goode and Bean, Oceanic

Ichth., p. 368, 1895 (reference). — Garman, Mem. Mus. Comp. Zool., vol. 24, p. 394, 1899 (reference). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference).

Lotella maxillaris J. H. Bean

Lotella maxillaris J. H. Bean, Proc.
U. S. Nat. Mus., vol. 7, p. 241, 1889
(type locality: lat. $39^{\circ}55'N.$, long.
 $70^{\circ}28'W.$, Gulf Stream, 396 fathoms).
— Verrill, Amer. Journ. Sci. Arts,
vol. 22, p. 296, 1881 (type). —

Günther, Rep. Voy. Challenger, vol. 22, p.
86, 1887 (note). — Jordan, Rep. U. S.
Fish Comm., pt. 13, p. 918, 1885 (1887)
(name). — Goode and Bean, Oceanic

Ichth., p. 368, pl. , fig. 321, 1895 (type).
— Jordan and Evermann, Bull. U. S. Nat.
Mus., no. 47, pt. 3, p. 2546, 1898 (copied).

— Garman, Mem. Mus. Comp. Zool., vol.
24, p. 394, 1899 (reference). — Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol.
15, p. 393, 1906 (reference).

Lotella maximowiczi Herzenstein

Lotella maximowiczi Herzenstein,
Annuaire Akad. Imp. Sci. St. Petersb.,
p. 13, 1896 (type locality: Halabodate).
— Jordan, Tanaka, Snyder, Journ. College
Sci. Tokyo, vol. 33, art. 1, p. 408, 1913
(compiled).

906

Lotella physcis (Schlegel)

Lota physcis Schlegel, Fauna Japonica, Poiss., pts. - , p. 248, pl. 111, fig. 1, 1846 (type locality: Japan).

Lotella physcis Günther, Cat. Fishes Brit. Mus., vol. 4, p. 346, 1862 (copied). — Steindachner and Döderlein, Denks. Akad. Wiss. Wien, math.-nat. Kl., vol. 49, pt. 1, p. 277, 1885 (Tokyo). — Goode and Bean,

Oceanic Ichth., p. 368, 1895 (reference). — Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 118, 1901 (compiled). — Smith and Pope, Proc. U. S. Nat. Mus., vol. 31, p. 494, 1906 (Matsushima Bay). — Franz, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. band 1, p. 28, 1910 (Aburatsubo, Yokohama, Misaki). —

Snyder, Proc. U. S. Nat. Mus., vol. 42, p. 450, 1912 (Hakodate; Aikawa). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 408, 1913 (compiled). — Jordan and

Richardson, Mem. Carnegie Mus., vol. 6, no. ⁹⁰⁷
4, p. 304, Sep. 1914 (Sagami Bay).

Lotella schlegeli Kaup, Archiv naturges.,
vol. 24, pt. 1, p. 88, 1858 (on Schlegel).

Genus Physiculus Kaup

Physiculus Kaup, Archiv Naturges., vol. 24, pt. 1, p. 88, 1858. (Type Physiculus dalwigki Kaup, monotypic.)

Pseudophyscis Gunther, Cat. Fishes Brit. Mus., vol. 4, p. 350, 1860. (Type Lota breviuscula Richardson = Enchelyopus bachus Schneider, monotypic.)

Leptophyscis Garman, Mem. Mus. Comp. Zool., vol. 24, p. 182, 1899. (Type Leptophyscis pilifer Garman, monotypic.)

Body elongate, rather robust, tail compressed and strongly tapering. Snout short, broad, blunt, obtusely rounded, projects beyond mouth. Eye large. Maxillary reaches opposite center of eye. Mandibular barbel usually present, sometimes absent. Mouth moderate or large, terminal, oblique, lower jaw included. Teeth in villiform bands in jaws, minute.

909
equal. Vomer and palate toothless.
Gill openings wide, membranes
united below throat, free from
isthmus. Gill rakers short, slender.
Gills 4. Pseudobranchiae glandular.
Scales small, cycloid, rather deciduous,
extend on head. Lateral line present.
Dorsals two, nearly contiguous, first
arising above pectoral base, second
arising immediately behind first
and 1/2 in long. Anal single, not
notched. Dorsals and anal covered
with loose scaleless membranes.
Caudal rounded or pointed, slender,
free. Ventrals on very narrow wide
set bases, rays 3 to 7, outer two
elongate and filamentous. Vent
well premedian.

Species usually found in deep water.

910

Physiculus argyropastus Alcock

Physiculus argyropastus Alcock, Journ. Asiatic Soc. Bengal, vol. 62, pt. 2, p. 180, pl. 9, fig. 2, 1893 (type locality: Bengal Bay, 128 to 170 fathoms); vol. 63, pt. 2, p. 121, 1894 (Bengal Bay, 162 to 170 ^{fathoms}); Illustrat. Zool. Investigator, pt. 5, pl. 22, fig. 1, 1898; Cat. Deep Sea Fishes Ind. Mus., p. 77, 1899 (Bengal Bay; Gulf of Manaar; 180 to 217 fathoms). — Garman, Mem. Mus. Comp. Zool., vol. 24, p. 394, 1899 (reference). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference).

Physiculus bachus (Schneider)

911

Enchelyopus bachus Schneider, Syst. Ichth.,
Bloch, p. 53, 1801 (type locality: New
Zealand).

Gadus bachus Forster, in Schneider, Syst.
Ichth., Bloch, p. 53, 1801 (name in
synonymy).

Lota bacchus Cuvier, Règne Animal, vol. 2,
pt. 2, p. 334, 1829 (footnote).

Lotella bacchus Hutton, Fishes of New
Zealand, p. 46, 1872 (Wellington Harbor).
— Hector, Edible Fish. New Zealand,
p. 115, pl. 7, fig. 75, 1872 (Port Clarence).

Pseudophyscis bachus Günther, Rep. Voy.
Challenge, vol. 1, pt. 6, p. 26, 1880 (Port
Hardy, D'Urville Island, New Zealand),
p. 28 (Twofold Bay, South Australia).

912

Physiculus bacchus Günther, Rep. Voy. Challenger, vol. 22, p. 87, 1887 (reference).

Physiculus bacchus Waite, Rec. Canterbury Mus., vol. 1, no. 1, p. 18, April 25, 1907 (reference). — McCulloch, Austral. Mus. Mem., no. 5, pt. 1, p. 129, June 29, 1929 (New South Wales; South Australia; New Zealand).

? Blennius venustus Solander; in Richardson, Rep. Brit. Assoc. Adv. Sci., 1842 (1843), p. 27 (type locality: Tolaga Bay, New Zealand); Parkinson, in Richardson, p. 27 (Ship Cove, New Zealand).

Lota breviuscula Richardson, Voy. Erebus and Terror, Fishes, p. 61, pl. 38, figs. 1-2, 1844-48 (1846) (type locality: Bay of Islands, New Zealand).

Physiculus breviusculus Günther, Cat. Fishes Brit. Mus., vol. 4, p. 350, 1860 (type; New Zealand). — Goode and Bean, Oceanic Ichth., p. 365, 1895 (reference).

913
Pseudophycis breviusculus Hutton, Fishes
of New Zealand, p. 47, 1872 (Dusky Bay).

Physiculus barbatus (Günther)

914

Pseudophyscis barbatus Günther, Ann.
Mag. Nat. Hist., ser. 3, vol. 11, p. 116, Jan. 1,
1863 (type locality: Victoria, Australia).

Physiculus barbatus Goode and Bean,
Oceanic Ichth., p. 365, 1895 (reference). —
McCulloch, Austral. Mus. Mem., no. 5,
pt. 1, p. 128, June 29, 1929 (Victoria,
South Australia, Tasmania, New South
Wales, New Zealand).

Physiculus palmatus Klunzinger, Archiv
Naturges., vol. 38, pt. 1, p. 308, 1872 (type
locality: Hobson's Bay); Sitzb. Ber.
Akad. Wiss. Wien, math. nat. Kl., vol.
80, pt. 1, p. 405 (Hobson's Bay, Port Philip,
Queens Cliff). — Steindachner, Denks.
Akad. Wiss. Wien, math.-nat. Kl., vol. 41,
pt. 1, p. 12, 1879 (Hobson's Bay).

Lotella grandis Ramsay, Proc. Linn. Soc. New
South Wales, vol. 5, pt. 4, p. 462, 1880 (1881)
(type locality: Wollongong, New South Wales).

915-

Physiculus capensis Gilchrist

Physiculus capensis Gilchrist, Fisher.
Mar. Biol. Surv. South Australia,
Rep. No. 2, pt. 3, p. 62, 1922 (type locality:
 Natal coast, 91 to 220 fathoms). —

Barnard, Ann. South African Mus., vol.
20, pt. 1, p. 326, June 1925 (Agulhas Banks;
Algoa Bay; East London; 25 to 310
fathoms)!

916

Physiculus dalwigki Kaup

Physiculus dalwigki Kaup, Archiv
Naturges., vol. 24, pt. 1, p. 88, 1858
(type locality: Mediterranean). —
Brauer, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, p. 393, 1906 (reference).

Physiculus dalwigkii Günther, Cat.
Fishes Brit. Mus., vol. 4, p. 348, 1862
(Madeira); Proc. Zool. Soc. London, p.
226, 1868 (St. Helena). — Melliss,

St. Helena, p. 109, pl. 21, fig. 4, 1875.
— Döderlein, Prosp. Pesc. Sicil., p. ,
1878 (Palermo; Messina). — Günther,
Rep. Voy. Challenger, vol. 1, pt. 6, p. 63,
1880 (Off Iwohima, 345 fathoms).

— Jordan and Gilbert, Bull. U. S. Nat.
Mus., no. 16, p. 801, 1883 (copied). —
Steindachner and Döderlein, Denks. Akad.
Wiss. Wien, math.-nat. Kl., vol. 49, pt. 1,
p. 279, 1885 (Tokyo Bay). — Günther,
Rep. Voy. Challenger, vol. 22, p. 88, 1887

(Madeira). — Vaillant, Expéd. Sci.
Travailleur et Talisman, Poiss., p.
290, pl. 25, fig. 3-c, 1888 (Madeira;
off Soudan; 640 to 782 meters).

— Carus, Prodr. Medit., vol. 2, p. 575,
1893 (compiled). — Goode and Bean,
Oceanic Ichth., pp. 366, 531, 1895 (copied).
— Garman, Mem. Mus. Comp. Zool.,
vol. 24, p. 394, 1899 (reference).

918

Physiculus fulvus J. H. Bean

Physiculus fulvus J. H. Bean, Proc. U. S. Nat. Mus., vol. 7, p. 240, 1884 (1885) (type locality: lat. $40^{\circ}1'N.$, long. $69^{\circ}56'W.$, Gulf Stream, 79 fathoms). —

Goode and Bean, Oceanic Ichth., p. 366, pl. 91, fig. 319, 1895 (type; lat. 20° to $77^{\circ}N.$, long. 74° to $87^{\circ}W.$; 80 to 955 fathoms). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference). — Jordan, Evermann, Clark, Rep. U. S. Fish Comm., pt. 2, p. 212, 1930 (reference).

Physiculus japonicus Hilgendorf 919

Physiculus japonicus Hilgendorf, Sitzs.
Ber. Naturforsch. Freund. Berlin,
p. 80, 1879 (type locality: Japan). —
Yokohama,

Garman, Mem. Mus. Comp. Zool., vol. 24,
p. 394, 1899 (reference). — Jordan and
Snyder, Annot. Zool. Japon., vol. 3, p.
119, 1901 (reference). — Jordan and Starks,
Bull. U. S. Fish Comm., vol. 22, p. 601,
1902 (1904) (Ose Point, Suruga Bay). —

Smith and Pope, Proc. U. S. Nat. Mus.,
vol. 31, p. 494, 1906 (Kagoshima). — Franz,
Abhandl. Kon. Bayer. Akad. Wiss., vol.
4, Suppl. Band 1, p. 27, fig. 20, pl. 10,
figs. 10-11, 1910 (Sagami Bay, Yokohama,
Aburatsubo). — Snyder, Proc. U. S.

Nat. Mus., vol. 42, p. 450, 1912 (Hakodate).
— Radcliffe, Proc. U. S. Nat. Mus., vol.
43, p. 106, 1912 (Kagoshima example). —
Jordan, Tanaka, Snyder, Journ. College Sci.,
Tokyo, vol. 33, art. 1, p. 408, 1913 (compiled).

920

— Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, p. 23, December 1922 (copied Hilgendorf). — Jordan and

Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, p. 326, June 27, 1925 (Shizuoka; Misaki).

Physiculus kaupi (not Poe) (Günther, Rep. Voy. Challenger, vol. 22, p. 88, pl. 17, fig. A, 1887) (Japan, 345 fathoms).

— Goode and Bean, Oceanic Ichth., p. 366, 1895 (reference). — Fowler,

Occas. Pap. Bishop Mus., vol. 10, no. 7, p. 392, 1923 (Honolulu); Mem. Bishop Mus., vol. 10, p. 88, pl. 4 A, 1928 (Honolulu).

Physiculus dalwigkii (not Kaup) Steindachner and Döderlein, Denks. Akad. Wiss. Wien, Math.-nat. Kl., vol. , pt. , p. 279, 1887 (). —

Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 119, 1901 (reference).

921

Lotella physcis (not Schlegel) Jordan
and Snyder, Proc. U. S. Nat. Mus., vol.
23, p. 376, 1901 (Tokyo).

Physiculus grinnelli Jordan and Jordan,
Mem. Carnegie Mus., vol. 10, no. 1, p. 22,
pl. 1, fig. 3, Dec. 1922 (type locality :
Honolulu).

Physiculus kaupii Poey

Physiculus kaupii Poey, Repert. Fis.
Nat. Cuba, p. 186, 1865 (type locality:
Cuba). — Jordan and Evermann, Bull.

U. S. Nat. Mus., no. 47, pt. 3, p. 2548, 1898
(copied). — Brauer, Deutsch. Tiefsee
Exped. Valdivia, vol. 15, p. 393, 1906
(reference). — Jordan, Evermann, Clark,
Rep. U. S. Commis. Fisher., pt. 2, p. 211, 1930
(reference).

923

Physiculus longifilis Weber

Physiculus longifilis Weber, Siboga Exped.,
vol. 57, p. 178, pl. 5, fig. 6, 1913 (type
locality: lat. $8^{\circ}27'S$, long. $122^{\circ}54.3'E$,
Flores Sea, 247 meters). — Weber and

Beaufort, Fishes Indo Austral. Archip.,
vol. 5, p. 10, fig. 3, 1929 (type).

924

Physiculus longipes Garman

Physiculus longipes Garman, Mem.
Mus. Comp. Zool., vol. 24, p. 188 (394),
pl. 42, fig. 2-a, 1899 (type locality:
Gulf of Panama; lat. 7° N., 79° to 80°
W.; 127 to 695 fathoms). — Brauer,

Deutsch. Tiefsee Exped. Valdivia, vol.
15, p. 393, 1906 (reference). — Jordan,
Evermann, Clark, Rep. U. S. Comm. Fisher.,
pt. 2, p. 212, 1930 (reference).

925

Physiculus natalensis Gilchrist

Physiculus natalensis Gilchrist, Fisher.
Mar. Biol. Surv. South Africa, Rep. No. 2,
pt. 3, p. 63, 1922 (type locality: Natal
coast, 183 fathoms). — Barnard,

Ann. South African Mus., vol. 21, pt. 1,
p. 327, June 1925 (type).

926

Physiculus nematopus Gilbert

Physiculus nematopus Gilbert, Proc. U. S. Nat. Mus., vol. 13, p. 114, 1890 (type locality: Gulf of California, 71 to 221 fathoms). — Jordan and Evermann, Bull.

U. S. Nat. Mus., no. 47, pt. 3, p. 2548, 1898 (copied). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference). — Jordan, Evermann, Clark, Rep. U. S. Commis. Fisher., pt. 2, p. 212, 1930 (reference).

927.

Physiculus nigrescens Smith and Radcliffe

Physiculus nigrescens Smith and Radcliffe,
Proc. U. S. Nat. Mus., vol. 43, p. 105, pl. 22,
fig. 1, 1912 (type locality: lat. $13^{\circ}40'9''N$,
long. $120^{\circ}57'45''$, Verde Island Passage,
200 fathoms).

Physiculus peregrinus (Günther)

Pseudophyscis peregrinus Günther, Proc. Zool. Soc. London, p. 669, 1871 (type locality: Manado, Celebes).

Physiculus peregrinus Meyer, Anal. Soc. Espan. Hist. Nat. Madrid, vol. 14, p. 39, 1885 (Manado). — Günther, Rep. Voy. Challenger, vol. 22, p. 88, 1887 (reference).

— Goode and Bean, Oceanic Ichth., p. 366, 1895 (copied). — Weber and Beaufort, Fishes Indo Austral. Archip., vol. 5, p. 9, 1929 (copied).

929

Physiculus rastrelliger Gilbert

Physiculus rastrelliger Gilbert, Proc.
U. S. Nat. Mus., vol. 13, p. 113, 1890 (type
locality: off Lower California, 171 to
184 fathoms). — Jordan and Evermann,

Bull. U. S. Nat. Mus., no. 47, pt. 3, p. 2549,
1898 (compiled). — Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, p. 393,
1906 (reference). — Fowler, Proc. Acad.

Nat. Sci. Philadelphia, 1923, p. 296
(La Jolla, California). — Jordan,
Evermann, Clark, Rep. U. S. Comm. Fisher,
pt. 2, p. 212, 1930 (reference).

Physiculus rhacinus (Forster)

Gadus rhacinus Forster, in Lichtenstein,
Descript. Animal., p. 304, 1844 (type
 locality: Queen Charlotte Sound, New Zealand).

Lotella rhacinus Hutton, Fishes of New
Zealand, p. 46, 1872 (Cook Strait).

Physiculus rhacinus Waite, Rec.
Canterbury Mus., vol. 1, no. 1, p. 18, April
 25, 1907 (reference).

Physiculus roseus Alcock

Physiculus roseus Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 8, p. 28, July 1891
(type locality: lat. $11^{\circ}31'40''N$, long. $92^{\circ}46'40''E$, Andaman Sea); Journ. Asiatic Soc. Bengal, vol. 63, pt. 2, p. 122, 1894 (note), — Goode and

Bean, Oceanic Ichth., p. 530, 1895 (copied).
— Alcock, Cat. Deep Sea Fishes Ind. Mus., p. 76, 1899 (Andaman Sea, 185 to 220 fathoms). — Garman, Mem. Mus. Comp. Zool., vol. 24, p. 394, 1899 (reference).
— Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference). — Weber, Siboga Exped., vol. 57, p. 177, 1913 (between Kajoa-Batjan; Arafura Sea; 310 to 397 meters). — Weber and Beaufort, Fishes Indo Austral. Archip., vol. 5, p. 8, 1929 (Weber's materials).

{ Illustrat. Zool. Investigator, pt. 2, pl. 11, fig. 2, 1894.

Genus Austrophycis Ogilby

932

Austrophycis Ogilby, Proc. Linn. Soc. New South Wales, vol. 22, pt. 1, p. 90, April 28, 1897. (Type Austrophycis megalops Ogilby, monotypic.)

Body moderately long, strongly compressed. Head rather large, tumid. Snout short, rounded. Eye large, supralateral. Mandibular barbel present. Mouth anterior, cleft wide, oblique, lower jaw included. Premaxillaries slightly protractile, form entire dental area of upper jaw; maxillary narrow, terminal end exposed and but little expanded. Upper jaw with narrow band of small cardiform teeth, 2 outer series enlarged and separated from inner portion, which triserial, by distinct interspace; lower teeth triserial, like upper. Vomer, palatines, pterygoids and tongue toothless. Nostrils together, in deep depression before eye. Opercle with feeble spine, not piercing skin.

and with border serrated. Gill ⁹³³
opening wide, extends forward below
mouth angle. Gill rakers few,
distant, serrulated. Isthmus wide.
Branchiostegals 6. Scales moderate,
cycloid, imbricate. Dorsals 2; first
well developed, rays 10; second dorsal
and anal long and low, latter longer
and begins below middle of
interdorsal space, separated from
caudal by short interspace. Vertical
fins largely enveloped in thick skin.
Caudal homocercal, narrow. Pectoral
well developed, pointed, rays 25.
Ventrals widely separated, inserted
little behind isthmus, of 5 slender
rays on narrow base.

Differs from *Physiculus* in its
dentition, opercular armature and
anterior origin of anal fin. A
single small species on the New
South Wales coast.

Austrophycis megalops Ogilby

934

Austrophycis megalops Ogilby, Proc. Linn.
Soc. New South Wales, vol. 22, pt. 1,
p. 91, April 28, 1897 (type locality:
Maroubra, New South Wales). Mc
Culloch, Austral. Mus. Mem., no. 5, pt. 1,
p. 129, June 29, 1929 (reference).

Genus Laemonema Günther

935

Laemonema Günther, Cat. Fishes Brit. Mus., vol. 4, p. 356, 1862. (Type Phycis yarrellii Lowe, designated by Jordan, Genera of Fishes, Pt. 3, p. 318, 1919.)

Body moderately long. Maxillary reaches below middle of eye. Mandibular barbel usually present. Teeth villiform, slender, in bands in jaws. Small patch of vomerine teeth, none on palatines. Gill rakers long, slender, numerous. Branchiostegals 7. Scales small. Fins naked. Dorsals 2, first of 5 rays, fins narrowly separated. One anal. Caudal separate, rounded or bluntly pointed. Ventral reduced to single long ray, bifid at end or of 3 rays. Vent median or just opposite level of end of pectoral.

936

Laemonema barbatula Goode and Bean

Laemonema barbatula Goode and Bean,
Bull. Mus. Comp. Zool., vol. 10, no. 5, p.
204, 1882 (1883) (type locality: lat. 32°
 $43' 25''$ N., long. $77^{\circ} 20' 30''$ W., Gulf Stream,
230 fathoms; lat. $38^{\circ} 35'$ N., long. $73^{\circ} 13'$ W.,
225 to 312 fathoms). — Jordan, Rep. U.S.

Fish Comm., pt. 13, p. 917, 1885 (1887).
(reference). — Goode and Bean, Oceanic
Ichth., p. 362, 1895 (lat. 32° to 38° N., long.
 73° to 78° W., ^{225 to} 312 fathoms).

Laemonema barbatulum Günther, Rep. Voy.
Challenger, vol. 22, p. 90, 1887 (Gulf Stream).
— Garman, Mem. Mus. Comp. Zool., vol.
24, p. 394, 1899 (reference). — Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol.
15, p. 393, 1906 (reference). — Jordan,
Evermann, Clark, Rep. U.S. Comm. Fisher.,
pt. 2, p. 213, 1929 (reference).

937

Laemonema globiceps Gilchrist

Laemonema globiceps Gilchrist, Marine
Investig. South Africa, vol. 4, p. 157,
pl. 43, 1906 (type locality: Cape Point,
460 to 800 fathoms); Fisher. Mar. Biol.
Surv., Rep. no. 2, p. 63, 1922 (Natal
coast, 790 fathoms). — Barnard, Ann.

South African Mus., vol. 21, pt. 1, p. 327,
August 1925 (Cape Point, 345 to 800
fathoms).

Laemonema gracillipes Garman

Laemonema gracillipes Garman, Mem.
Mus. Comp. Zool., vol. 24, p. 187 (394),
pl. 42, 1899 (type locality: lat. 0° to 7°
N., long. 79° to 90° W.; Gulf of Panama;
Galapagos Islands; 182 to 331 fathoms).

— Brauer, Deutsch. Tiefsee Exped.
Valdivia, vol. 15, p. 393, 1906 (reference).

— Jordan, Evermann, Clark, Rep. U.S.
Fish. Comm., pt. 2, p. 213, 1929 (reference).

939

Laemonema melanurum (Goode and Bean)

Laemonema melanurum (Goode and Bean,
Oceanic Ichth., p. 363, pl. 90, fig. 316,
1895 (type locality: lat. $31^{\circ}26'N.$, long. $79^{\circ}07'W.$, 440 fathoms; lat. 11° to $39^{\circ}N.$, long.
 69° to $88^{\circ}W.$, 208 to 1467 fathoms). —

Garman, Mem. Mus. Comp. Zool., vol. 24,
p. 394, 1899 (reference). — Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, p. 393,
1906 (reference). — Jordan, Evermann,
Clark, Rep. U. S. Comm. Fisher., pt. 2, p.
213, 1929 (reference).

940

Laemonema rhodochir Gilbert

Laemonema rhodochir Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, p. 657, fig. 255, 1903 (1905) (type locality: off Oahu, 53 to 211 fathoms). — Brauer,

Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference). — Fowler, Mem. Bishop Mus., vol. 10, p. 88, 1928 (compiled).

Laemonema robustum Günther

941

Laemonema robustum Günther, Cat.
Fishes Brit. Mus., vol. 4, p. 357, 1862
(type locality: Madeira); Rep. Voy.
Challenger, vol. 22, p. 90, 1887 (same).

— Vaillant, Expéd. Sci. Travailleur et
Talisman, Poiss., p. 286, 1888 (type
locality: off Morocco; Cape Verde
Islands; 460 to 760 meters). — Goode

and Bean, Oceanic Ichth., p. 362, 1895
(compiled). — Garman, Mem. Mus. Comp.
Zool., vol. 24, p. 394, 1899 (reference). —
Brauer, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, p. 393, 1906 (reference).

Laemonema yarrellii (Lowe)

Physcia yarrellii Lowe, Trans. Zool. Soc. London, vol. 2, p. (184) 190, 1837 (type locality: Madeira); Fisher of Madeira, p. 43, pl. 7, 1843 (Madeira).

Laemonema yarrellii Günther, Cat. Fishes Brit. Mus., vol. 4, p. 356, 1862 (type); Rep. Voy. Challenger, vol. 22, p. 90, 1887 (name). — Goode and Bean, Oceanic Ichth., p. 362, 1895 (compiled).

Laemonema yarrellii Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference).

943

Genus Laemonemodes Gilchrist

Laemonemodes Gilchrist, Marine Investig.
South Africa, vol. 2, p. 208, 1903 (1904).
(Type Laemonemodes compressicauda
Gilchrist, monotypic.)

Body moderately elongate. Snout moderately blunt. Mouth moderately large, lower jaw shorter than upper. Maxillary reaches opposite middle of eye. Teeth in bands in both jaws and on vomer, none on palatines. Mandibular barbel present. Branchiostegals 7. Gill rakers? Pyloric coeca? Two dorsals, narrowly separated, first fin of 5 rays. Anal single. Caudal pointed. Ventral rays 8, outermost 2 very long and united for greater part their length, inner 6 very minute. Vent below middle of pectoral.

Differs from Laemonema in the structure of the ventral fins.

Laemonemodes compressicauda Gilchrist

Laemonemodes compressicauda Gilchrist,
 Marine Investig. South Africa, vol. 2, p.
 208, pl. 16, 1903 (1904) (type locality:
 Bashee River beacon on East Coast
 bearing N. $\frac{1}{2}$ E. distant 15 miles, 300 to
 400 fathoms); Fisher. Mar. Biolog.
 Surv., Rep. No. 2, p. 64, 1922 (Natal
 coast, 420 fathoms). — Barnard, Ann.

South African Mus., vol. 21, pt. 1, p. 328,
 pl. 13, fig. 2, June 1925 (off East London;
 Natal coast, 300 to 420 fathoms).

9945

Genus Gaidropsarus Rafinesque
Gaidropsarus Rafinesque, Ind. Ittiol.
Sicil., pp. 11, 51, 1810. (Type Gadus
mustellaris Rafinesque = Gadus mustela
Linnaeus, monotypic.)

Enchelyopus (not Gronow 1763) Schneider,
Syst. Ichth. Bloch, p. 50, 1801. (Type
Gadus cimbricus Linnaeus, designated
by Jordan and Evermann, Genera of
Fishes, pt. 1, p. 57, 1917.)

Dropsarus Rafinesque, Analyse de la
nature, p. 82, 1815. (Type Gadus
mustela Linnaeus, virtually. Dropsarus
Rafinesque proposed to replace Gaidropsarus
Rafinesque.)

Mustel Oken, Isis, p. 1182, 1817 (on
Les Mustèles Cuvier, Règne Animal,
vol. 2, p. 215, 1817). (Type Gadus
mustela Linnaeus, tantotypic.)

Mustela (not Linnaeus 1758) Olsen,
Isis, p. 1182, 1817. (On Les Mustèles
Cuvier, Règne Animal, vol. 2, p. 215,
 1817. Type Gadus mustela Linnaeus.)

Anos Risso, Hist. Nat. Eur. Mérid., vol.
 3, p. 214, 1826. (Type Gadus mustela
Linnaeus, designated by Jordan and
Evermann, Genera of Fishes, pt. 1, p.
 119, 1917.)

~~Opus~~

Motella Cuvier, Règne Animal, ed. 2,
 vol. 2, p. 334, 1829. (Type Gadus mustela
Linnaeus, virtually. Motella Cuvier
 proposed to replace Mustela.)

Ciliata Couch, Mag. Nat. Hist., vol. 5, p. 15,
 1832. (Type Ciliata glauca Couch = Gadus
mustela Linnaeus, monotypic.)

947

Couchia Thompson, Nat. Hist. Ireland,
vol. 4, p. 188, 1856. (Type Couchia
minor Thompson = Gadus mustela
Linnaeus, monotypic.)

Molvella Kaup, Archiv Naturges., vol.
24, pt. 1, p. 90, 1858. (Type Molvella
borealis Kaup = Gadus mustela
Linnaeus, monotypic.)

Hypsiptera Günther, Cat. Fishes Brit.
Mus., vol. 2, p. 386, 1860. (Type
Hypsiptera argentea Günther, monotypic.)

Rhinonemus Gill, Proc. Acad. Nat. Sci.
Philadelphia, p. 241, 1863. (Type Gadus
cimbrius Linnaeus, designated by
Jordan, Genera of Fishes, pt. 3, p. 325,
1919.)

948

Body elongate, rounded in front, compressed behind. Caudal peduncle distinct. Head flattened above. Snout short, rounded. Mouth moderate, lower jaw shorter than upper. Maxillary reaches to eye or slightly beyond. Teeth in band in each jaw and on vomer. Barbels 3 or more on snout, lips and below mandibular symphysis. Gill rakers nearly obsolete. No pseudobranchial.

Branchiostegals 6 or 7. Vertebrae 48 or 49, of which 32 or 33 caudal. Pyloric coeca 8. Scales minute. Two dorsals, first of very slender small rays, as fringe in depression, first ray prolonged; second fin elongate and also reaches caudal base.

6606 and 6607. North west point of Verde Island. July 22, 1908. Length 148 to 158 mm.

1325 and 9224. Opol, Mindanao. August 4, 1909. Length 128 to 153 mm.

7330. Pandan Island near Sablayan Bay, Mindoro. December 12, 1908. Length 148 mm. Bars of head alternately black and sulphur yellow. Interorbital area slate gray. Oblique body stripes orange, sometimes dusky, interspaces pale gray or white. Breast and belly sulphur yellow. Dorsal spines very pale orange, membranes pale dusky lemon, continued as inframarginal bar on soft dorsal and as marginal on vertical portion; black postocular bar runs along base of anterior spinous dorsal, rising to middle, continues on terminal portion of soft fin under yellow and returns

949

Anal single. Caudal distinct.
Ventral rays 3 to 8.

Species few, small fishes from shallow waters and littoral in cool seas. The first dorsal especially distinctive, broken into a number of fine filamentous rays, united by fin membrane only basally, the last hidden in deep groove in dorsal margin. As the European species are frequently found in rock pools they have been called "rocklings".

1183 [1538]. Bolinao Bay. March 10,
1909. Length 138 mm.

1274 and 1275. Cabugan Island, ^{Hinunangan} ~~Hinunangan~~
July 30, 1909.

769. Cebu market. March 19, 1909.
Length 123 mm.

A 708. Danawan Island. September 27,
1909. Length 153 mm.

8759. Lahuy Island. June 11, 1909.
Length 149 mm.

8451. Maribojoc, Bohol Island.
March 25, 1909. Length 168 mm. Interorbital
slate gray, other bars on head almost
black. Yellow as pale sulphur and
lateral bands bright orange, somewhat
dusky along scales. First dorsal
spine slightly orange.

1016. Maricaban Island. January 20,
1908. Length 50 mm.

950

Gaidropsarus capensis (Kaup)

Notella capensis Kaup, Archiv Naturg.,
vol. 24, pt. 1, p. 90, pl. 13, fig. 3,
1858 (type locality: locality?
[= Cape of Good Hope]).

Gaidropsarus capensis Thompson,
Marine Biol. Rep. South Africa, No. 3,
p. 108, 1916 (South Africa). — Barnard,

Ann. South African Mus., vol. 21, pt. 1,
p. 323, June 1925 (Kalk Bay; Algoa
Bay; 25 fathoms).

Gaidropsarus novae-zealandiae (Hector)

Motella novae-zealandiae Hutton,
Trans. New Zealand Inst., vol. 6,
p. 107, pl. 18, fig. 76 b, 1874 (type
locality: Cape Campbell).

Gaidropsarus novae-zealandiae Waite,
Rec. Canterbury Mus., vol. 1, no. 1, p. 18,
April 25, 1907 (reference).

Gaidropsarus pacificus (Schlegel)

Motella pacifica Schlegel, Fauna Japonica, Poiss., pts. 10-14, p. 249, 1846 (type locality: Japan). — Kaup, Archiv Naturg., vol. 24, pt. 1, p. 90, 1858 (reference). — Günther, Cat. Fishes

Brit. Mus., vol. 4, p. 367, 1862 (copied). — Bleeker, Nederl. Tijdschr. Dierk., vol. 4, p. 130, 1873 (1874) (reference).

Oxos pacificus Goode and Bean, Oceanic Ichth., p. 381, 1895 (name).

Gaidropsarus pacificus Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 119, 1901 (Nagasaki).

953

Family Merlucciidae

Body moderately long, terete. Caudal peduncle distinct. Head long, depressed, pike like. Mouth terminal. Jaws and vomer furnished with strong teeth. No barbels at chin. Suborbitals moderate. Gill membranes not united. No pseudobranchiae. Branchiostegals 7. Single pyloric appendage. Scales small, deciduous. Dorsals 2, anterior, short and posterior long. Anal single, long, like second dorsal. Second dorsal and anal more or less incised at margin behind middle, sometimes so deeply fins may appear divided. Caudal truncate or forked, rays procurent

p. 34 (Samoa). — Fowler and Ball,
Bishop Mus. Bull., no. 26, 1925 (1926), p.
17 (Johnston Island, Wake Island).
Citharoedus ornatissimus Kaup, Arch.
Naturges., ^{band 28,} abth. 1, 1860, p. 142 (Tahiti).
Tetragnopterus (Citharoedus) ornatissimus
Bleeker, Atlas Ichth. Ind. Neerl., vol. 9,
1877, p. 32, plate (13). 375, fig. 2 (Amboina,
New Guinea).
Chaetodon ornatissimus Gray, Zool. Miscellany,
1831, p. 33. Hawaiian Islands. — Griffith,
Animal Kingd. Cuvier, Pisces, vol. 10, 1834,
p. 323, plate 40 (name only).
Chaetodon ornatissimus var. kaupii Ahl,
Arch. Naturges., band 89, abth. A, heft 5,
1923, p. 52. Samoa, Rahm, Matupi.

forward on caudal peduncle.

Ventrals subjugular.

Fishes of the northern and southern hemispheres, ranging into deep water in the warmer seas of their distribution. They differ from the Gadidae chiefly in structural characters of the skull and the absence of a mandibular barbel.

Chaetodon ornatissimus Cuvier.

Chaetodon ornatissimus (Volander) Cuvier,
 Hist. Nat. Poiss., vol. 7, 1831, p. 77, Tahiti.
 — Lesson, Voy. Coquille, Zool., 2 (1), 1830
 (1831), p. 179, plate 30, fig. 1 (Matavai Bay,
 Tahiti). — Günther, Cat. Fish. Brit. Mus.,
 vol. 2, 1860, p. 15 (Amboina; type of
Chaetodon ornatissimus). — Kner, Reise Novara,
 Fische, 1866, p. 98 (Tahiti). — Günther, Journ.
 Mus. Godeffroy, band 2-3 (5-6), 1874, p. 38,
 plate 30, fig. 13 (Hawaiian Islands). —
Elera, Cat. Faun. Filip., vol. 1, 1895, p. 485
 (copied). — Jordan and Evermann, Bull. U. S.
 Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 373,
 plate 53 (Honolulu). — Jordan and Seale,
 Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 33
 (Manila). — Snyder, Proc. U. S. Nat. Mus.,
 vol. 42, 1912, p. 510 (Okinawa). — Fowler,
 Bishop Mus. Bull., no. 22, 1925, p. 27 (Honolulu).

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Genus Merluccius Rafinesque

Merluccius Rafinesque, Car. nuov. Anim. Sicil., p. 26, 1810. (Type Merluccius smiridus Rafinesque = Gadus merluccius Linnaeus, monotypic.)

Merlucius Gill, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 244. (Type Gadus merluccius Linnaeus.)

Onus Rafinesque, Indice Ittiol. Sicil., p. 12, 1810. (Type Onus riali Rafinesque = Gadus merluccius Linnaeus, virtually. Onus Rafinesque proposed to replace Merluccius Rafinesque.)

Merlangus Rafinesque, Indice Ittiol. Sicil., p. 67, 1810. (Type Onus riali Rafinesque, virtually. Merlangus Rafinesque proposed to replace Onus Rafinesque.)

Stomodon Mitchill, Rep. Fishes New York, p. 7, 1814. (Type Stomodon bilinearis Mitchill, monotypic.)

956

Hydronus Minding, Naturges. Fisch.,
p. 83, 1832. (Type Gadus merluccius
Linnaeus, monotypic.)

Merlus Guichenot, Hist. Nat. Chile, Gay,
vol. 2, p. 328, 1847. (Type Merlus
gayi Guichenot, monotypic.)

Homalopomus Girard, Proc. Acad. Nat.
Sci. Philadelphia, 1856, p. 133. (Type
Homalopomus trowbridgii Girard,
monotypic.)

Epicopus Günther, Cat. Fishes Brit.
Mus., vol. 2, p. 248, 1860. (Type Merlus
gayi Guichenot, virtually. Epicopus
Günther proposed to replace Merlus
Guichenot.)

Head slender, conic. Snout ⁹⁵⁷
long, depressed. Eye rather large.
Mouth large, oblique, lower jaw
protruding. Maxillary extends to
eye. Teeth slender, variable, in
about 2 series, inner row longer
and movable. Vomerine teeth
similar. Palatines toothless.
Preopercle with channel behind
crest, crossed by short radiating
ridges; preopercle edge free.
Well defined oblong triangular
excavation at forehead, bounded
by ridges on separated frontals
converging backward with low
occipital crest. Gill rakers long.
Dorsals well separated, second
with deep emargination. Anal
similar. Ventrals well developed,
rays 7.

A 1190. Game Road, Gillolo Island.
December 1, 1909. Length 143 mm.

A 1372. Basa Island, Celebes. December
17, 1909. Length 145 mm.

A 1472. Cape Kait, Libani Bay, Celebes.
December 29, 1909. Length 142 to 160 mm.

3 examples.

and 480, 1055.
479, Tidore Island, south of Ternate.
November 24, 1909. Length ^{128 to} 140 mm. 4 examples.

562 to 564. Tidore Island. November 25,
1909. Length 136 to 142 mm.

Large voracious fishes, with
soft flesh, some ranging into
deep water.

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552, 553, 555, A 1222 to A 1225. Gomomo
Island. December 3, 1909. Length 82 to
153 mm.

A 1140, A 1147. Kayoa Island. November 29,
1909. Length 137 to 140 mm. 3 examples.

352. Mahul Island. September 29, 1909.
Length 120 mm.

475 to 478, A 1077, A 1090. Maitara Island.
November 26, 1909. Length 112 to 147 mm.
8 examples.

A 749 and A 750. Sipadan Island.
September 28, 1909. Length 141 to 150 mm.

A 1324. Tifu Bay. December 10, 1909.
Length 146 mm.

A 1266. Ubi, Bouru Island, Dutch
East Indies. December 9, 1909. Length 148
mm.

A 1504. Biriabiraham Island, Borneo.
December 31, 1909. Length 157 mm.

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Merluccius gayi (Guichenot)

Merlus gayi Guichenot, Hist. Nat. Chile, ^{Gay} Bull. 2, p. 329, pl. 8, fig. 2, 1847 (type locality: Valparaiso).

Merluccius gayi Günther, Cat. Fishes Brit. Mus., vol. 4, p. 346, 1862 (compiled). — Steindachner, Zool. Jahrb., Suppl. Band 4, p. 325, 1898 (Tumbes; Talcahuano). — Delfin, Cat. Pesc. Chile, p. 100, 1901 (compiled); Revist. Chile. Hist. Nat., vol. 7, no. 56, p. 269, fig. 7, 1903. — Waite, Rec. Canterbury Mus., vol. 1, no. 1, p. 18, April 25, 1907 (reference). — Evermann and Radcliffe,

Bull. U. S. Nat. Mus., no. 95, p. 156, 1917 (Callao; Paita).

Gadus productus (not Ayres) Kner, Reise Novara, Fische, p. 278, 1865 (Valparaiso).

Gadus australis Hutton, Fishes New Zealand, p. 45, 1872 (type locality; Cook Straits). — Hector, Edible Fishes of New Zealand, p. , pl. 7, fig. 72, (Bruce Bay); Handbook New Zealand, p. 16, 1879.

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Merluccius productus (Ayres)

Merlangus productus Ayres, Proc. Cal. Acad. Sci., vol. 1, p. 64, 1855 (type locality: markets, our coasts, Oregon and Washington). — Bleeker, Nederl. Tijds. Dierk., vol. 4, p. 130, 1873 (1874) (Reference to China?).

Gadus productus Günther, Cat. Fishes Brit. Mus., vol. 4, p. 338, 1862 (compiled).

Merlucius productus Gill, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 247 (compiled). — Jordan and Gilbert, Bull. U. S. Nat. Mus., no. 16, p. 809, 1882 (compiled).

Merluccius productus Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 3, p. 2531, 1898 (Puget Sound; Santa Catalina). — Evermann and Goldsborough, Bull. Bur. Fisher., vol. 26, p. 345, fig. 125, 1906 (1907) (Seattle, Washington). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1923, p. 281 (Victoria, B.C.), p. 287 (San Pedro, Cal.).

p. 296 (La Jolla, Cal.). — Chu, Biol.
Bull. St. John's Univ., no. 1, p. 89, Jan.
1931 (compiled). 962

Homalopomus trowbridgii Giard, Proc.
Acad. Nat. Sci. Philadelphia, vol. 8, p.
132, 1856 (type locality: Astoria, Oregon
Territory); U. S. Pac. R. R. Ex., Fishes,
p. 144, Pl. 40a, figs. 1-4, 1858 (type).